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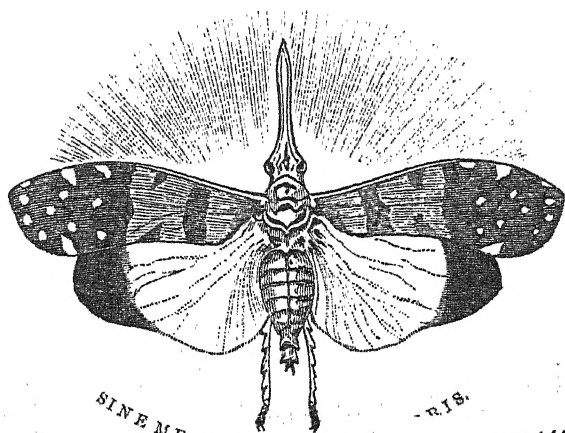
INDIAN AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI

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THE
ENTOMOLOGICAL
MAGAZINE.

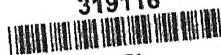
VOL. IV.



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PATERNOSTER-ROW.

M DCCCXXXVII.

" If we attend to the history and manners of Insects, they will furnish us with many useful lessons in ethics, and from them we may learn to improve ourselves in various virtues. We have, indeed, the inspired authority of the wisest of mankind for studying them in this view, since he himself wrote a treatise upon them, and sends his sluggard to one for a lesson in wisdom. And if we value diligence and indefatigable industry; judgment, prudence, and foresight; economy and frugality; if we look upon modesty and diffidence as female ornaments; if we revere parental affection; of all these, and many more virtues, insects, in their various instincts, exhibit several striking examples."

KIRBY & SPENCE.

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The Editor returns his best thanks to those Gentlemen who have obligingly sent him their names as Subscribers to this Volume: and also to those Entomologists who have kindly favoured him with Contributions.

THE
ENTOMOLOGICAL MAGAZINE.

JULY, 1836.

MINUTES OF THE ENTOMOLOGICAL CLUB.

(Printed by Order.)

At a Meeting of the Entomological Club, held at Mr. Bennett's, 48, Cannon Street, on Thursday Evening, 9th of June, 1836, a Committee appointed, at a prior Meeting of the Club, to take into consideration the state of the Laws of the Entomological Club, with reference to the Property of which the Club is now becoming possessed, and to frame a Constitution adapted to its present circumstances, brought in the following Preamble and Code of Laws; which, after sundry alterations now incorporated therewith, was unanimously agreed to.

PREAMBLE.

WHEREAS, an Entomological Club established in London, in the year 1826, for the purpose of social meetings at the residences of its Members, for the communication of facts, the comparison of notes, the naming of specimens, and mutual improvement in the science of Entomology, has existed and met regularly from that time to the present—a period of ten years; and whereas the proceedings of the said Club have been governed by certain understood, but for the most part unwritten Regulations, mutually agreed on between the Members; and whereas, in consequence of the

establishment of a Collection, and the contribution of subscriptions for the purchase of cabinets, and donations of books, collections of insects, &c., the said Club is now becoming possessed of considerable property: IT IS RESOLVED AND AGREED, That all former Rules and Regulations shall cease and determine, and the following be adopted as the Laws of the Club.

CODE OF LAWS.

I.

That this Club be entitled the ENTOMOLOGICAL CLUB.

II.

That the Club consist of eight Members.

III.

That the Club may elect an unlimited number of *Honorary Corresponding Members*.

IV.

That any vacancy occurring in the Club be filled up, by election, from the Honorary Corresponding Members resident within five miles of the General Post-Office.

V.

That a Candidate for Membership be proposed and seconded at an ordinary Meeting of the Club, and be balloted for at the next Meeting. A single negative to exclude.

VI.

That the Honorary Corresponding Members have an equal right, with the Members, to attend the ordinary Meetings of the Club, and to introduce Visitors, either personally or by letter, to inspect the Collection.

VII.

That no subscription or pecuniary consideration whatever be an essential qualification to Membership in this Club, but that all

voluntary contributions from Members, Honorary Members, or others, be received and applied to the purposes of the Club.

VIII.

That a Treasurer, Secretary, and Curator, be elected annually at a Special Meeting in May, to be appointed with a Chairman for the occasion at a previous Ordinary Meeting, at which Special Meeting the Treasurer, Secretary, and Curator, for the past year, are to present their respective Reports. The exertions of these officers shall be given gratuitously.

IX.

That the Ordinary Meetings of the Club be held monthly, at the houses of the Members, in alphabetical rotation. The Member at whose house the Meeting falls shall be the Chairman, but shall not thereby lose his vote.

X.

That the property of the Club be vested in three Trustees, to be elected by ballot, but subject to removal by vote of the Club; to whom, on behalf of the Club, all donations are to be made and legacies devised, and in whose name conjointly the property of the Club shall be insured. Any vacancy occurring in the number of Trustees shall be filled up, by a fresh appointment, as soon as possible.

XI.

That no Member shall possess any right or property in the Club disposable either during life or by testament.

XII.

That no alteration in these Laws be made, nor resolution affecting them be agreed to, with less than six Members present, four of whom shall vote in the affirmative. That a copy of any proposed emendation, alteration, or repeal, of either of these Laws, and a copy of any proposed new Law or Resolution, shall be delivered, by the proposer thereof, to each Member of the Club, at least ten days previously to the debate thereon taking place.

XIII.

That every Member of the Club be required to sign these Laws.

RESOLVED also, That the following Regulations for the Cabinet and Library of the Entomological Club be adopted.

I.

That a *general* collection be made, consisting of specimens of Exotic and British Insects, Arachnoida, Myriapoda, and Crustacea, with books and MSS. relating to the science in all its branches; and that a special object of the Club be to form a model named Cabinet of Insects *unquestionably British*.

II.

That the Cabinet and Library be open at the house of the Curator, 21, Union Street, Deptford, on the Friday in every week during the months of January, February, March, April, September, October, November, and December.

III.

That Visitors be introduced either personally or by written order of a Member or Honorary Corresponding Member, and that all Entomologists consulting the Cabinet or Library shall be at perfect liberty to make any notes, memoranda, descriptions or drawings of any insect, or from any book or MS. contained therein; but that no insect be allowed to be taken from the cabinet on any pretence whatever, without the special vote of the Club first obtained for that purpose.

IV.

That the Curator keep a complete register of the insects, &c. belonging to the Club, and that any valuable or unique specimens presented to the Club be registered, with the name of the donor, and be reclaimable by him at any time in case of the dissolution of the Club.

RESOLVED also, That the thanks of the Entomological Club be given, and are hereby given, to the Rt. Hon. the EARL of MOUNTNORRIS, also to WM. CHRISTY, JUN., EDWARD DOUBLEDAY, THOMAS INGALL, WM. BENTLEY, J. CHANT, GILES MUNBY, JOHN WALTON, GEORGE NEWMAN, JUN., ROBERT FOSTER, GEORGE TRUSTED, HENRY METFORD, and J. V. THOMPSON, Esquires, for their various valuable donations to the Club.

RESOLVED also, That the present Officers of the Club, viz. Mr. J. HOYER, as Treasurer; Mr. F. WALKER, as Secretary; and Mr. E. NEWMAN, as Curator; be re-elected to their respective offices during the current year.

RESOLVED, That the whole of the foregoing Resolutions be printed in the Entomological Magazine.

FRANCIS WALKER, *Secretary*.

Contributions of Insects, Books, MSS., &c. to the Entomological Club, may be sent or addressed to either of the Members of the Club, as under :—

Mr. W. BENNETT, 48, Cannon Street.

Mr. J. B. BEVINGTON, 1, King William Street.

Mr. J. S. BOWERBANK, 3, Critchell Place, New North Road, or at Messrs. BOWERBANK and SONS, Distillers, Sun Street.

Mr. J. F. CHRISTY, Clapham Road, or at the Stangate Glass Works, Lambeth.

Mr. A. H. DAVIS, at Messrs. WESTLEY and DAVIS, 10, Stationers' Hall Court, Ave Maria Lane.

Mr. J. HOYER, at 9, Fortes' Terrace, Junction Road, or at Messrs. BOYSON and HOYER, 1, Crown Court, Threadneedle Street.

Mr. E. NEWMAN, 21, Union Street, Deptford, or at Messrs. HUTCHINSON and SON, 48, Mark Lane.

Mr. F. WALKER, Arno's Grove, Southgate, or 49, Bedford Square.

Also to the following Honorary Corresponding Members :—

Mr. W. CHRISTY, Jun., Clapham Road.

Mr. E. DOUBLEDAY, Epping, Essex.

INTRODUCTORY ADDRESS.

WE are sure that we cannot preface the Fourth Volume of the Entomological Magazine with any thing half so agreeable to the Entomologists of Great Britain as the information embodied in the foregoing Minutes. We never felt a more unmixed pleasure than we now experience in publishing a series of Resolutions which, we proudly feel, do honour to the little Association from which they emanate; and, at the same time, must contribute effectually and permanently to the advancement of the science of Entomology.

The Entomologists of this country have, for a number of years, been indebted solely to the liberality of individuals for the opportunity of comparing their captures with the regularly arranged and accurately named collections of those gentlemen on whom they had, generally, no claim, and to whom it was seldom in their power to make any adequate return. We need scarcely call the attention of our readers to the liberality of Mr. Stephens and Mr. Curtis in this respect. It is not to be expected that the collection of the Entomological Club can, at the outset, vie either in extent or in accuracy of nomenclature with the collections of Messrs. Stephens and Curtis, on which large sums of money, and almost an infinity of labour, have been expended; but it is no light matter to be able to assert that it already contains a greater number of species of British Insects than are named in Mr. Stephen's Catalogue, or Mr. Curtis's Guide. It will be an obvious interference with the duties of a Curator to enter into further detail here; we can only say that, as throughout the debates on the question of the establishment of this collection, the advance of Entomology in this country has been the single object kept in view; so we hope our brother entomologists will, in the same

spirit, and with equal zeal, contribute each his best endeavours to render the collection, as nearly as possible, perfect and complete: every locality has its peculiar insects, and there exists no local cabinet so poor but it could contribute desiderata to the richest.

At the commencement of this Magazine, now four years ago, we stated our intention of freely and fairly reviewing every entomological work that came before us. To the best of our ability we did so for a time, but by degrees the practice has been falling into disuse, until we have at last determined utterly to abandon it. *Experientia docet*. We do not say that we shall not, under the semblance of a review, occasionally extract some of the sweets contained in the publications of others, even though such publications be rife with much that our judgment condemns as illiberal or erroneous. The bee gathers honey from the most poisonous flowers. We do not say that we shall never avail ourselves of the title of a work as a shelter, from beneath which, though unseen, we may scatter the information which it ought to have contained. The mocking-bird of America warbles a thousand songs which the denizens of her primeval forests ought to have sung; but the searching and caustic critique will never again be seen in our pages—those who enjoy it will look for it in vain. Henceforth we shall give the titles of entomological works generally, occasionally, perhaps, with extracts, or a tabular view of their contents, but never again, at least such is our intention, never again shall we point out errors, or criticise opinions or assertions. Many things are written which we would were unwritten—many things which we now believe to have been far more severe than the occasion warranted, but we have some satisfaction in being able most explicitly to state, that at the moment of writing we fully and firmly believed each article to be just and impartial. If we have erred, we have done so unintentionally; let us remind those whom we have injured, if such there are, that—

“ To err is human, to forgive divine.”

Coetaneous with the appearance of this work was that of “ Annales ” of the Entomological Society of France, a work

commenced under circumstances and with objects precisely similar to our own. We have great pleasure in noticing the regularity with which that valuable work has been carried on, and in expressing our opinion that its contents, so often alluded to by us with approbation, have in no degree diminished in interest.

Of the Entomological Society of London we have already said much; we have to report that it continues to flourish; a considerable library and collection have been formed, a periodical publication of much merit has been commenced, and there appears to be a constant accession of members, among whom may now be reckoned many of the most eminent British zoologists.

We have also to record the establishment of another society, called the "Practical Entomological Society," which has already enrolled a great number of members. Its meetings are held weekly, in Macclesfield-street, City Road, and its principal objects appear to be the keeping up of a social feeling among the metropolitan entomologists, and the formation of a perfect collection of British insects. The meetings of this Society are held at a tavern (the Duke of Bridgewater) until more suitable accommodation can be procured. The secretary is Mr. W. Courtney.

These recent associations, and the success which attends them, prove that the love of the science of Entomology is increasing in this country. May we not venture to express a belief that the earliest association of the kind now in existence, the Entomological Club, and this Magazine, which has emanated from it, and which is unwearying in the diffusion of information, have been in some degree instrumental in inducing the change?

ART. I.—*Monographia Chalciditum*. By FRANCIS WALKER.

(Continued from Vol. III. page 496.)

“ ——— the green myriads in the peopled grass.”

PTEROMALUS.

SECTIO XLIX.—Mas et Fem.

GASTRACANTHUS ET HETROXYS, *Westwood*.

Mas.—Caput magnum, thorace latius: antennæ filiformes, hirti, corpore paullo breviores; articuli 5°. ad 10^{um}. longitudine decrescentes; clava fusiformis, acuminata, articulo 10°. multo longior: mandibulæ quadratæ, subarcuatæ; una 4-dentata, dens externus mediocris incurvus acutus, 2^{us}. 3^{us}. et 4^{us}. breves obtusi; altera 3-dentata, dens externus major incurvus acutus, 2^{us}. mediocris subacutus, 3^{us}. brevis latus obtusus: maxillæ breves; lacinia longæ, angustæ, subarcuatæ, acuminatæ, lobatæ; palpi 4-articulati, subclavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. fusiformis longior: labium breve, obconicum; ligula brevis, antice lata et ciliata; palpi 3-articulati breves crassi, articulus 2^{us}. brevissimus: thorax ovatus: prothorax brevis: mesothoracis parapsides convexæ, prominentes; suturæ conspicuæ: metathorax mediocris: abdomen cochleatum, planum, thorace paullo longius; segmentum 1^{um}. longum, 2^{um}. et sequentia breviora subæqualia: pedes subæquales: alæ amplæ; nervus humeralis ramulum brevem rejiciens; radialis cubitali ramulum brevissimum emittente plus duplo longior.

Fem.—Antennæ clavatæ, corporis dimidio longiores; articuli 5°. ad 10^{um}. longitudine decrescentes; clava ovata, articulo 10°. paullo latior et duplo longior: abdomen fusiforme, thorace paullo angustius et dimidio aut duplo longius, apicem versus attenuatum acuminatum pubescens, non angulatum; segmenta subæqualia: oviductus dum quietem agit occultus.

Sp. 164. Pter. pulcherrimus. Fem. *Viridi-æneus*, abdomen cupreum subtus rufum, antennæ nigræ, pedes flavi, proalis fasciæ 2 fusæ.

Gastracanthus pulcherrimus, *Westwood*, *Loudon's Mag. Nat. Hist.* VI. 121.

Caput viridi-æneum, supra cupreum: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. pallide fulvus; 2^{us}, nigro-æneus:

thorax obscure æneo-viridis, subtus cupreus: abdomen cupreum, subtus rufum: pedes pallide flavi; ungues et pulvilli fusi: alæ limpidæ; proalæ cujusque disco fasciæ 2 fuscae, abbreviatæ, enormes, medio connexæ; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. $2\frac{3}{4}$; alar. lin. $4\frac{1}{2}$.)

September; near London. North Wales.

Sp. 165. Pter. scenicus. Mas et Fem. *Viridis aut æneus, abdomen cupreum plerunque basi et subtus rufum, antennæ nigræ, pedes rufi aut fulvi, metafemora nonnunquam supra fusca, proalæ sæpissime fusco nebulosæ.*

Mas.—Caput viride: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. nigro-viridis: mandibulæ rufæ: maxillæ et labium viridia: palpi, laciniae et ligula flava: thorax viridis; segmentorum suturæ æneo-virides: abdomen cupreum, basi et subtus rufum: pedes pallide rufi; coxæ virides; meso- et metatarsi flavi, apice fulvi: alæ subfuscae; proalæ fusco nebulosæ; squamulæ et nervi obscure fulva; stigma parvum.

Fem.—Caput postice æneum: antennis articulus 1^{us}. fulvus; 2^{us}. viridi-fuscus: thorax viridi-æneus: mesothoracis scutellum æneo-cupreum: abdominis segmentum 1^{um}. viridi-varium: oviductus rufus: pedes læte fulvi; coxæ virides; meso- et metatarsi flavi; ungues et pulvilli fusi: alarum squamulæ et nervi fulva. (Corp. long. lin. $1\frac{1}{4}$ —2; alar. lin. $1\frac{5}{4}$ — $2\frac{1}{2}$.)

Var. β.—*Mas*, caput et thorax cyaneo-viridia.

Var. γ.—*Mas*, thorax æneo-viridis; mesothoracis scutellum æneum.

Var. δ.—*Mas*, abdomen omnino cupreum: antennis articulus 1^{us}. nigro-viridis, basi fulvus: proalæ non nebulosæ.

Var. ε.—*Mas*, *Var. δ*. similis: caput et thorax omnino viridia: abdomen ante medium et subtus obsolete fulvum: metafemora apice supra fusca.

Var. ζ.—*Mas*, metafemora supra viridi-fusca.

Var. η.—*Mas*, caput et thorax viridia: abdomen cupreum.

Var. θ.—*Mas*, *Var. η*. similis: abdomen basi et subtus fulvum: pedes pallide fulvi: alæ sublimpidæ.

Var. ι.—*Fem*. antennis articulus 1^{us}. fuscus, basi et subtus fulvus; 2^{us}. nigro-viridis.

Var. κ.—*Fem*. metathorax cyaneo-viridis.

Var. λ.—*Fem.* thorax viridis: mesothoracis scutellum æneum: abdominis rufum vix conspicuum.

Var. μ.—*Fem.* abdomen supra viride, apice cupreum.

June to August; near London. Hampshire, &c. Found in Ireland by Mr. Haliday.

Sp. 166. *Pter. invenustus*. Mas. *Nigro-viridis*, *P. scenico minor obscurior*, *abdomen nigro-cupreum*, *antennæ nigræ*, *pedes fusci*, *alæ fuscæ*.

Caput et thorax nigro-viridia: ocali ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. viridi-fuscus, basi fulvus; 2^{us}. nigro-viridis: abdomen nigro-cupreum: pedes fusci; coxæ virides; pro- et meso- pedum tibiæ et tarsi fulva: proalæ fuscæ; squamulæ et nervi fulva; stigma parvum; metalæ subfuscae. (Corp. long. lin. 1; alar. lin. 1½.)

Var. β.—Metatarsi basi fulvi.

June; near London. Hampshire.

Sp. 167. *Pter. macromerus*. Mas. *P. scenico similis at gracilior*, *alæ longiores angustiores*.

Caput viridi-æneum: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. nigro-virides, ille basi fuscus: thorax viridi-æneus: abdomen cupreum: pedes pallide fulvi; coxæ virides: alæ sublimpidæ; proalæ fusco obsolete nebulosæ; squamulæ et nervi fulva; stigma minimum. (Corp. long. lin. 1¾; alar. lin. 2¼.)

Found near London.

Sp. 168. *Pter. stenogaster*. Fem. *P. scenico similis*, *antennæ breviores*, *abdomen minus attenuatum*. *Viridi-æneus*, *abdomen cupreum subtus basi fulvum*, *antennæ nigro-fuscæ*, *pedes flavi aut fulvi*, *tibiæ nonnunquam fuscæ*, *proalæ subfulvæ*.

Caput æneo-viride: oculi ocellique rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, subtus flavus; 2^{us}. fusco-æneus; thorax viridi-æneus; latera viridia: abdomen cupreum; segmentum 1^{um}. læte viride, subtus fulvum: pedes flavi; coxæ virides; femora et protarsi fulva: proalæ subfulvæ; squamulæ et nervi fulva; stigma minutum; metalæ sublimpidæ. (Corp. long. lin. 1½—1¾; alar. lin. 1¾—2.)

Var. β.—Caput viride: antennis articulus 1^{us}. fulvus, apice fuscus: thorax æneo-viridis.

Var. γ.—Tibiæ et tarsi fulva.

Var. δ.—*Var. β.* similis: mesothoracis scutellum cupreum: abdominis segmentum 1^{um}. supra cupreum: tibiæ fulvæ.

Var. ε.—*Var. δ.* similis: caput et thorax cuprea.

Var. ζ.—Caput cyaneo-viride: antennis articulus 1^{us}. fulvus, apice fuscus, thorax viridis; discus æneus: abdomen basi supra cyaneum: tibiæ fuscæ: alarum squamulæ et nervi obscure fulva; stigma pallide fuscum.

July; near London.

Sp. 169. Pter. præpileus. Fem. *P. scenico, sæpissime minor, antennæ graciliores plus clavatæ. Viridis, abdomen cupreum, antennæ fuscæ, pedes fulvi, alæ sublimpidæ.*

Caput et thorax viridia: oculi ocellique rufo-picei: antennæ obscure fuscæ; articulus 1^{us}. fulvus; 2^{us}. pallide fuscus: abdomen cupreum: pedes pallide fulvi; coxæ virides; meso- et metatarsi flavi, apice fulvi: alæ sublimpidæ; squamulæ et nervi pallide fulva; stigma minutum. (Corp. long. lin. 1½; alar. lin. 1½.)

Found near London.

Sp. 170. Pter. dimidiatus. Fem. *Viridi-æneus, præcedentibus brevior, abdomen cupreum, antennæ et pedes fuscæ, femora viridia, alæ limpidæ.*

Caput viride: oculi ocellique rufo-picei: antennæ fuscæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax æneo-viridis; discus cupreus: abdomen cupreum, subtus viride cupreo fasciatum; segmentum 1^{um}. læte viride, cupreo varium: pedes fusci; coxæ et femora viridia, hæ apice basique fulva; tarsi basi fulvi: alæ limpidæ; squamulæ et nervi fulva; stigma fuscum, mediocre. (Corp. long. lin. 1½; alar. lin. 2.)

Found near London.

Sp. 171. Pter. fuscescens. Fem. *Viridi-æneus, P. dimidiato brevior, abdomen cupreum basi et subtus rufum, pedes flavi aut fulvi, alæ limpidæ.*

Caput obscure viride: oculi ocellique rufo-picei: antennæ nigro-fuscæ; articulus 1^{us}. fulvus; 2^{us}. fusco-fulvus: thorax obscure

viridi-æneus: abdomen cupreum, basi et subtus rufum; segmentum 1^{um}. viridi micans: pedes flavi; coxæ virides; femora pallide fulva; ungues et pulvilli fulvi: alæ limpidae; squamulae et nervi pallide fulva; stigma minutum. (Corp. long. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$; alar. lin. 1—1 $\frac{1}{2}$.)

Var. β.—Caput læte viride: thorax æneo-viridis: proalæ subfulvæ.

Var. γ.—Thorax æneus: proalæ subfulvæ.

Var. δ.—Tibiæ et protarsi fulva; femora obscuriora: proalæ subfulvæ.

Var. ε.—*Var. δ.* similis: metathorax viridis.

Var. ζ.—Caput et thorax viridia.

Var. η.—Abdomen basi supra cupreum.

Var. θ.—Antennis articulus 1^{us}. fuscus; 2^{us}. fusco-æneus: meta-femora fusca; tibiæ et protarsi fulva: proalæ subfulvæ.

Var. ι.—*Var. θ.* similis: metatibiæ fuscæ.

Found near London.

GENUS XIV.—CHEIROPACHUS, *Westwood*.

Mas.—Caput mediocre, thoracis latitudine: antennæ filiformes, graciles, corporis dimidio paullo longiores; articuli 5^o. ad 10^{um}. curtantes; clava fusiformis, acuminata, articulo 10^o. multo longior: mandibulæ quadratæ; una 4-dentata, arcuata, dens externus acutus incurvus sat longus, 2^{us}. et 3^{us}. minores obtusiores, internus brevis latus obtusus; altera 3-dentata, subarcuata, dens externus acutus incurvus sat longus, 2^{us}. brevior latior subacutus, internus latus obtusus: maxillæ latæ, sat longæ; lacinia angustæ, subarcuata, acuminatæ, intus lobatæ; palpi 4-articulati subclavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. longior fusiformis: labium angustum, fusiforme; ligula brevis, antice lata et ciliata; palpi 3-articulati breves lati, articulus 2^{us}. brevissimus: thorax sublinearis, parum convexus, basi et apice angustatus: prothorax brevissimus: mesothoracis parapsidum suturæ vix conspicuæ: metathorax mediocris: abdomen lineare, thorace paullo brevius et angustius; segmenta transversa, 1^{um}. magnum, sequentia breviora subæqualia: sexualia vix conspicua: femora valida: alæ mediocres; nervus humeralis ramulum rejiciens obsoletum, radialis cubitali plus duplo longior.

Fem.—Caput sat magnum, thorace paullo latius: antennæ extrorsum crassiores, corporis dimidio vix longiores; articuli 5^o. ad 10^{um}.

curtantes, vix latescentes; clava longi-ovata, acuminata, articulo 10°. paullo latior et fere duplo longior: thorax ovatus, convexus: abdomen longi-ovatum, acuminatum, thorace longius, subtus carinatum, apice pubescens: oviductus rima ventrali occultus.

Sp. 1. Cheir. quadrum. Mas et Fem. Mas. *Viridis, abdomen cupreum fulvo maculatum, antennæ fuscae, pedes fulvi, proalis macula 2 fuscae.* Fem. *Cupreus, abdomen immaculatum, antennæ nigro-fuscae, pedes quam mari obscuriores.*

Diplolepis quadrum . . *Fabr. Syst. Piezat.* 152.

Cleonymus maculipennis . *Curtis, Brit. Ent.* IV. 194.

Cheiropachus quadrum . *Westwood, Zool. Journ.* IV. Pl. 2, fig. 2.

Mas.—Læte viridis, cupreo varius: oculi ocellique rufo-picei: antennæ fuscae; articulus 1^{us}. fulvus: abdomen cupreum, basi læte viride, medium ante fulvo maculatum: pedes fulvi; coxæ virides; meso- et metatarsi flavi, apice fusci: alæ albo limpidæ; squamulae et nervi fulva; stigma minutum; proalæ cuique maculae 2 quadratae nigro-fuscae, una ad nervi ulnaris apicem, altera apud stigma major.

Fem.—Obscure cupreus: caput antice et subtus æneo-viride: oculi ocellique rufo-picei: antennæ nigro-fuscae; articulus 1^{us}. fulvus, 2^{us}. fusco-viridis: abdomen æneo-viride; segmentum 1^{um}. micans cupreo varium; discus obscure cupreus: pedes obscure fulvi; coxæ virides; femora incrassata, subtus denticulata; tarsi flavi, apice fusci; protarsi pallide fulvi. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—*Fem.* caput et metathorax æneo-viridia.

Var. γ.—*Fem.* caput et thorax æneo-viridia: abdomen basi cyaneum.

July, September; near London. Isle of Wight.

Sp. 2. Cheir. tutela. Mas et Fem. Mas, *viridis aut viridi-æneus, abdomen cupreum flavo maculatum, pedes fulvi, antennæ et femora fusca, proalis macula rotunda nigro-fusca.* Fem. *cupreus, abdomen immaculatum, antennæ nigro-fuscae, proalis macula major pallidior.*

Mas.—Caput viride, inter ocellos viridi-æneum: oculi ocellique rufo-picei: mandibulae rufæ: maxillæ virides; laciniae fulvæ:

labium et palpi fusca; ligula flava: antennæ fuscæ; articulus 1^{us}. fulvus; 2^{us}. fusco-viridis: thorax viridis; discus cupreo varius: abdomen cupreum, medium ante flavo maculatum, apice viridi-æneum: pedes fulvi; coxæ virides; meso- et metafemora et metatibiæ pallide fusca; tarsi flavi, apice fusci; protarsi obscuriores: alæ limpidæ; squamulæ et nervi fulva; stigma minutum; proalæ cuique macula apud stigma rotunda nigro-fusca.

Fem.—Caput cupreo-æneum, antice viridi-æneum: antennæ nigro-fuscæ; articulus 1^{us}. fulvus; 2^{us}. viridi-æneus: thorax et abdomen cuprea, ejus discus obscurior, segmentum 1^{um}. micans viridi varium: pedes fulvi; coxæ æneæ; femora fusco cingulata; meso- et metatarsi flavi, apice fulvi: alarum maculæ quam *mari* majores et pallidiores. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—*Mas*, caput viride: thorax æneo-viridis; suturæ cyaneo-virides: metafemora et metatibiæ obscure fusca.

Var. γ.—*Mas*, femora et tibiæ omnino fulva.

Var. δ.—*Mas*, *Var. γ.* similis: thoracis suturæ et metathorax omnino cyaneo-viridia.

Var. ε.—*Mas*, *Var. γ.* similis: thorax æneo-viridis; mesothorax cyaneo-viridi fasciatus.

Var. ζ.—*Mas*, abdomen nigro-cupreum; macula flava vix conspicua: profemora fusco cingulata; metafemora nigro-fusca.

Var. η.—*Fem.* caput et thorax viridi-ænea, illum antice viride, ejus scutum cupreum.

Var. θ.—*Fem.* caput viridi-æneum, antice viride: femora nigro-fusca; metatibiæ fuscæ.

Var. ι.—*Fem.* alarum maculæ vix conspicuæ.

Var. κ.—*Fem.* caput et metathorax æneo-viridia.

May to September; on beams of wood perforated by *Anobium*, ash-trees, ivy, &c.; near London; North Wales. Found in Ireland by Mr. Haliday.

** *Prothorax productus*, antice angustus.

GENUS TRIGONODERUS, *Westwood*.^a

Mas.—Corpus squameum, fere glabrum: caput magnum, thorace

^a Lond. and Edinb. Phil. Mag. and Journ. of Science. Third Series. Vol. I. No. 2, p. 127.

latius, antice non impressum : oculi extantes : antennæ filiformes, pubescentes, 13-articulatæ, corporis dimidio longiores; articuli 5°. ad 10^{um}. curtantes; clava fusiformis, acuminata, articulo 10°. multo longior non latior : mandibulæ quadratæ ; una 4-dentata fere recta, dentes breves minuti subacuti; altera 3-dentata subarcuata, dens externus mediocris subacutus incurvus, 2^{us}. et 3^{us}. lati minuti obtusi : maxillæ breves ; lacinia longæ, angustæ, acuminatæ, lobatæ ; palpi 4-articulati, subclavati, articuli 1^{us}. 2^{us}. et 3^{us}. breves subæquales, 4^{us}. longior fusiformis : labium breve, obconicum ; ligula brevis, antice lata et ciliata ; palpi 3-articulati, breves, crassi, articulus 1^{us}. mediocris, 2^{us}. brevissimus, 3^{us}. fusiformis 1°. longior : thorax longi-ovatus : segmenta optime determinata : prothorax magnus, antice attenuatus : mesothoracis scutum angustum ; parapsides discretæ, extantes, convexæ ; scutellum angustum, obconicum : metathorax magnus ; scutellum medio canaliculatum : abdomen cochleatum, planum, fere læve, thoracis longitudine, apicem versus latius ; segmenta 6 subæqualia supra conspicua ; sexualia subexerta : pedes graciles, simplices, subæquales : alæ amplæ ; nervus humeralis ramulum rejiciens brevem, radialis cubitali triplo longior.

Fem.—Caput quam *mari* minus, breve, antice impressum : antennæ graciles, corporis dimidii longitudine, extrorsum vix crassiores ; articuli 5°. ad 10^{um}. curtantes, vix latescentes ; clava longi-ovata, acuminata, articulo 10°. duplo fere longior vix latior : thorax ovato fusiformis, quam *mari* angustior : abdomen lanciforme, thorace longius, apicem versus acuminatum et attenuatum, subtus carinatum et canaliculatum non angulatum nec compressum ; segmenta dorsalia 7 conspicua, 1^{um}. 2^{um}. et 3^{um}. brevia, 4^{um}. longius, 5^{um}. brevius, 6^{um}. 4°. longius, 7^{um}. breve : oviductus ad segmenti 4ⁱ. apicem conspicuus, dum quietem agit occultus.

Sp. 1. Tri. pulcher. Fem. Æneo-viridis, abdomen cupreo fasciatum, antennæ nigræ, pedes rufi, proalis macula sub-lunaris fusca.

Caput viride : oculi ocellique rufo-picei : trophi rufi : antennæ nigræ ; articulus 1^{us}. flavus apice supra fuscus ; 2^{us}. viridi-æneus : clava articulo 10°. latior : gula flava : thorax æneo-viridis : abdomen viride, pubescens ; segmenta apice obscure cuprea : pedes pallide rufi ; coxæ virides ; meso- et metatarsi flavi ; ungues et pulvilli fusi : alæ sublimpidæ, fusco obsolete nebulosæ ; squamulæ et nervi obscure fulvæ ; stigma minutum ; proalæ

macula in cujusque disco sublunaris fusca. (Corp. long. lin. $2\frac{1}{4}$ — $2\frac{1}{2}$; alar. lin. $3\frac{1}{2}$ —4.)

Var. β.—Mesothorax viridi-æneus.

June; near London.

Sp. 2. Tri. filatus. Fem. *P. pulchro gracilior, alæ longiores et angustiores. Æneo-viridis, abdomen viridicupreum basi rufum, antennæ nigræ, pedes rufi, proalis macula fusca.*

Caput cyaneo-viride: oculi ocellique rufo-picei: antennæ nigræ; articulus 1^{us}. fulvus, apice fuscus: trophi rufi: thorax viridis, hic et illuc æneo-viridi varius: abdomen supra cupreum, subtus viride fasciis cupreis, basi rufum; segmentum 1^{um}. læte cyaneo-viride; 2^{um}. et sequentia basi utrinque viridia: pedes pallide rufi; coxæ virides; meso- et metatarsi flavi; ungues et pulvilli fusci: alæ sublimpidæ, fusco obsolete nebulosæ; squamulæ et nervi obscure fulva; stigma minutum; proalæ macula in cujusque disco fusca. (Corp. long. lin. 2— $2\frac{1}{2}$; alar. lin. $2\frac{3}{4}$ — $3\frac{1}{2}$.)

Var. β.—Thorax omnino viridis: abdomen basi subtus tantum rufum: metatarsi fusci.

Found near London.

Sp. 3. Tri. tristis. Fem. *Præcedenti similis, abdomen brevius. Æneo-viridis, abdomen cupreum, antennæ nigropiceæ, pedes fulvi, proalis macula fusca.*

Caput viride: oculi ocellique rufo-picei: antennæ nigro-piceæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax æneo-viridis: metathorax viridis: abdomen cupreum; segmentum 1^{um}. cyaneum; 2^{um}. et sequentia basi utrinque viridia: pedes fulvi; coxæ virides; metafemora supra viridi-fusca; tarsi flavi, apice fulvi; ungues et pulvilli fusci: alæ subfuscæ; squamulæ et nervi fulva; stigma minutum; proalæ macula in cujusque disco fusca. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{3}{4}$.)

Found near London.

Sp. 4. Tri. ductilis. Mas et Fem. *Viridis aut æneo-viridis, cyaneo et cupreo varius, antennæ nigræ, pedes fulvi, mari femora fusca, alæ limpidæ.*

Mas.—Viridis: caput, pro- et mesothoracis latera et metathorax viridi-cyanea: oculi ocellique rufi: maxillæ et labium viridia:

palpi fusci : ligula et laciniae flava : antennae nigrae, pilis albis hirtae ; articuli 1^{us}. et 2^{us}. nigro-virides : gula flava : mesothoracis segmentorum margines aeneo-virides ; scutellum basi aeneo-cupreum : abdomen obscure cupreum, apice et utrinque viridescens ; segmentum 1^{um}. basi cyaneo-viride : sexualia flava : pedes fulvi ; coxae virides ; femora et metatibiae supra fusca ; meso- et metatarsi apice pallide fusci : alae limpidae ; squamulae et nervi obscure fulva ; stigma minutum.

Fem.—Læte viridis : antennis articulus 1^{us}. flavus : prothoracis latera, mesothoracis paraptera et metathorax cyanea : mesothoracis scutellum antice et postscutellum cuprea : abdomen aeneo-viride, cupreo varium, apice pubescens ; segmentum 1^{um}. viridi-cyaneum : oviductus pallide fulvus ; vaginae nigrae : pedes pallide fulvi ; tarsi flavi ; ungues et pulvilli fusci : alis squamulae et nervi fulva. (Corp. long. lin. $1\frac{1}{2}$ — $2\frac{1}{4}$; alar. lin. $1\frac{3}{4}$ — $2\frac{5}{4}$.)

Var. β.—*Mas*, caput viride : mesothoracis scutellum et epimera viridi-aenea : metathorax cyaneus.

Var. γ.—*Fem.* caput cyaneum.

Var. δ.—*Fem.* mesothoracis scutum, epimera et postscutellum viridi-aenea.

Var. ε.—*Fem.* caput et mesothoracis epimera cyaneo-viridia : abdomen viridi-cyaneum ; segmenta basi et apice aenea, 1^{um}. cyaneum.

Var. ζ.—*Fem.* capitis vertex cupreo varius : mesothoracis scutellum cupreum : metathorax cyaneo-viridis.

Var. η.—*Fem.* thorax cyaneo-viridis : mesothoracis scutellum et epimera aeneo-viridia, illum antice cupreum : abdominis segmenta 2^o. ad 7^{um}. viridia, basi et apice obscure aenea.

Var. θ.—*Fem.* metafemora supra pallide viridi-fusca.

Var. ι.—*Var. θ.* similis : metatibiae obscure fulvae.

Var. κ.—Caput et thorax viridi-cyanea, ejus segmentorum margines cupreo-aenei : antennis articulus 1^{us}. supra et apice fuscus.

Var. λ.—*Var. ι.* similis : corpus cyaneum : thoracis discus aeneo-varius : abdominis segmenta basi obscure cuprea.

Var. μ.—Caput cyaneo-viride : thorax aeneo-cupreus : abdomen cupreum ; segmentum 1^{um}. cyaneo-viride ; 2^{um}. et sequentia viridi-varia.

May and June ; on posts and beams of wood perforated by Anobium, &c.

Sp. 5. Tri. affinis. Fem. *T. ductilis similitudine, abdomen brevis. Viridi-cupreus cyaneo varius, antennæ obscure fulvæ, pedes fulvi, femora fusca, alæ limpidæ.*

Caput viride: oculi ocellique rufi: antennæ obscure fulvæ; articulus 1^{us}. fulvus, apice fuscus; 2^{us}. viridi-fuscus: thorax cupreus: prothorax et mesothoracis scutum utrinque viridi-cyanea: metathorax viridis, utrinque cyaneus: abdomen cupreum; segmenta basi viridi-ænea: pedes fulvi; coxæ virides; femora et metatibiæ supra pallide fusca; meso- et metatarsi flavi, apice fuscii: alæ limpidæ: squamulæ et nervi flava; stigma fulvum, minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{2}{3}$; alar. lin. $1\frac{3}{4}$ — $2\frac{1}{4}$.)

Var. β . — Capitis vertex viridi-æneus: mesothoracis scutellum, paraptera et epimera viridi marginata: abdominis segmentum 1^{um}. læte viride, cupreo varium; 2^{um}. et 3^{um}. basi viridia.

Var. γ . — Prothorax et mesothoracis latera anteriora viridia: metathorax cyaneo-viridis: abdomen cupreum; segmentum 1^{um}. læte cyaneo-viride.

September; near London. North Wales.

Sp. 6. Tri. linearis. Fem. *Viridi-cupreus, cyaneo varius, T. ductili angustior, antennæ obscure fusca, pedes fulvi, femora et nonnunquam metatibiæ fusca, alæ sublimpidæ.*

Corpus longum, gracile: caput viride, antice cyaneum; oculi ocellique rufi: antennæ obscure fusca; articulus 1^{us}. fulvus, apice fuscus: thorax viridis, antice utrinque cyaneo-viridis; discus æneo-cupreus: abdomen cupreum, subtus æneo-viride, basi cyaneum: pedes fulvi; coxæ virides; femora pallide fusca; meso- et metatarsi flavi, apice fuscii: alæ sublimpidæ; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ —2.)

Var. β . — Prothorax utrinque purpureo-cyaneus: abdomen basi viride: femora fulvo fusca.

Var. γ . — Var. β . similis: antennæ fusca: thoracis discus æneo-viridis.

Var. δ . — Thorax viridi-æneus; latera et metathorax viridia; prothorax utrinque purpureo-cyaneus: abdomen cupreum, basi viride: metatibiæ fusca.

Found near London.

Sp. 7. Tri. amabilis. Fem. T. affinis *statura, alæ angustiores. Viridi-cupreus, antennæ nigro-fuscæ, pedes fulvi, femora viridi-fusca, metatibiæ fusco cingulatæ, alæ fulvescentes.*

Caput læte viride: oculi ocellique rufi: antennæ nigro-fuscæ; articulus 1^{us}. fulvus, apice fuscus: thorax cupreus, utrinque antice viridis: abdomen viridi-æneum; segmentum 1^{um}. læte viride; 2^{um}. et sequentia apice obscure cuprea: pedes fulvi; coxæ virides; femora viridi-fusca; metatibiæ fusco cingulatæ; meso- et metatarsi apice fusi: alæ fulvescentes; squamulæ et nervi fulva; stigma minutum, obscurius. (Corp. long. lin. 1½; alar. lin. 2.)

October; near London.

Sp. 8. Tri. figuratus. Mas. *Cupreus, T. ductilis statura, antennæ nigræ, pedes fulvi, femora fusco vittata, alæ subfulvescentes aut limpidæ.*

Caput æneo-viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. nigro-virides: thorax cupreus; latera et metathorax viridi-ænea: abdomen nigro-cupreum, basi cupreum, medio obsolete fulvum: pedes fulvi; coxæ virides; femora fusco vittata; meso- et metatarsi flavi, apice pallide fusi: alæ subfulvescentes; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. 1—1¼; alar. lin. 1½—2.)

Var. β.—Caput viride: abdomen basi viridi-æneum: alæ limpidæ.

Var. γ.—Var. β. similis: tibiæ flavæ.

Found near London.

Sp. 9. Tri. deductor. Mas. T. ductili *nimis affinis at obscurior et sæpissime multo minor. Viridi-cupreus cyaneo varius, antennæ nigræ, pedes fulvi, femora et nonnunquam tibiæ fusca, alæ subfusca aut sublimpidæ.*

Caput viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides: thorax cupreus, antice et utrinque viridis; prothoracis latera cyanea: abdomen nigro-cupreum; segmentum 1^{um}. basi æneo-viride: pedes fulvi; coxæ virides; femora viridi-fusca; metatibiæ pallide fusca: proalæ subfusca; squamulæ et nervi fulva; stigma minutum; metalkæ sublimpidæ. (Corp. long. lin. 1—1½; alar. lin. 1¼—1½.)

Var. β.—Metathorax viridis.

Var. γ.—Metatibiæ obscure fulvæ.

•*Var. δ.*—Caput viridi-cyaneum.

Var. ε.—Pro- et mesotibiæ basi fulvo-fuscae.

Var. ζ.—Thorax viridis, antice utrinque cyaneum.

Var. η.—Minutus: abdomen omnino cupreum: pro- et mesotibiæ fusco fulvæ.

Var. θ.—Thorax viridis, utrinque viridi-cyaneus: mesothoracis scutellum viridi-æneum: proalæ sublimpidæ.

Var. ι.—Caput, pro- et metathorax obscure viridia: mesothorax cupreus: abdomen nigro-cupreum: tibiæ omnes fuscae.

Var. κ.—Thorax cupreus, utrinque viridis: alæ sublimpidæ.

Var. λ.—Thorax obscure æneo-viridis: alæ sublimpidæ.

Found near London.

Sp. 10. Tri. elegans. Mas. *Obscure viridis, præcedentibus gracilior, abdomen nigro-cupreum, antennæ nigrae, pedes fusco-fulvi, alæ fuscae.*

Corpus gracile: caput obscure viride, postice æneo-viride: oculi ocellique rufo-picei: antennæ nigrae; articuli 1^{us}. et 2^{us}. nigro-virides: thorax obscure viridis, æneo varius: abdomen nigro-cupreum, basi obscure viride: pedes fusco-fulvi; coxæ virides; tarsi et protibiæ fulva: alæ fuscae: squamulae et nervi fulva; stigma minutum; metalæ pallidiores. (Corp. long. lin. 1½—1½; alar. lin. 1¾—2.)

Var. β.—Thorax omnino viridis: abdomen basi viridi-æneum: femora viridi-fusca.

Found near London.

Sp. 11. Tri. obscurus. Fem. *Æneo-viridis, abdomen cupreo varium, antennæ nigrae, pedes fusci, femora nonnunquam viridia, alæ sub-fuscae, proalæ infumatae.*

Caput viridi-cyaneum: oculi ocellique picei: antennæ nigrae; articuli 1^{us}. et 2^{us}. æneo-virides: thorax æneo-viridis: mesothoracis scutellum cupreum: metathorax viridis: abdomen cupreum; segmentum 1^{um}. læte viride, cupreo varium; 2^{um}. 3^{um}. et 4^{um}. utrinque viridi-cyanea: oviductus rufus: pedes fulvi; coxæ virides; femora fusca; tibiæ fulvo-fuscae; protarsi

obscure fulvi; meso- et metatarsi apice fusci: alæ subfuscae; squamulae et nervi fuscae; stigma minutum; proalæ cujusque discus infumatus. (Corp. long. lin. $1\frac{3}{4}$ — $2\frac{3}{4}$; alar. lin. $2\frac{1}{4}$ — $3\frac{1}{4}$).

Var. β.—Thorax viridis; scutellum viridi-æneum: abdominis segmentum 1^{um}. cyaneum: femora viridi-fusca; tibiæ fuscae.

Var. γ.—*Var. β.* similis: abdomen viridi-cyaneum; segmenta apice cuprea; 1^{um}. micans, cupreo varium.

Var. δ.—*Var. β.* similis: protarsi fusci: meso- et metatarsi obscure fulvi.

Var. ε.—Thorax æneo-viridis: tibiæ et protarsi fulva: meso- et metatarsi pallidiores.

Var. ζ.—*Var. β.* similis: meso- et metatarsi fusci, basi fulvi.

May, August, and September; near London; Devonshire.

Sp. 12. Tri. contemptus. Fem. T. obscuro *affinis at brevior et latior*. *Æneo-viridis, abdominis discus cupreus, antennæ nigrae, pedes ferruginei, femora extus fusca, alæ subfuscae.*

Caput viride: oculi ocellique rufo-picei: antennæ nigrae; articulus 1^{us}. fulvus, apice viridi-fuscus: thorax viridi-æneus: prothorax utrinque viridis: mesothoracis scutellum cupreo varium: abdomen viride, cupreo varium; discus cupreus: pedes ferruginei; coxæ virides; femora extus fusca; genua fulva; meso- et metatarsi basi flavi, apice fusci: alæ subfuscae; squamulae et nervi obscure fulva; stigma minutum. (Corp. long. lin. 2; alar. lin. 3.)

Found at New Lanark, Scotland.

Sp. 13. Tri. atrovirens. Fem. T. obscuro *gracilior et obscurior*. *Nigro-viridis, abdomen cupreum, antennæ nigro-fuscae, pedes fusci, alæ sublimpidae.*

Corpus gracile: caput obscure viride: oculi ocellique rufo-picei; antennæ nigro-fuscae; articulus 1^{us}. viridi-fuscus: thorax obscure viridis: metathorax cyaneo-viridis: abdomen obscure cupreum, subtus et basi viridi-cyaneum: pedes fusci; coxæ virides; femora supra viridi-fusca; meso- et metatarsi basi fulvi: alæ sublimpidae; squamulae et nervi fulva; stigma minutum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$.)

Found near London.

Sp. 14. Tri. dolosus. Mas et Fem. *Cupreus, thoracis latera viridia aut cyanea, antennæ mari nigræ, fem. nigro-piceæ, pedes fulvo-fusci, alæ limpidae.*

Mas.—Caput obscure viride: oculi ocellique rufo-picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. virides: thorax viridi-æneus: prothorax utrinque viridi-cyaneus: mesothoracis latera anteriora et metathorax viridia: abdomen nigro-cupreum, basi nitentius: sexualia fusca: pedes fulvi; coxæ æneo-virides; femora fusco-ænea; metatibiæ fuscæ; meso- et metatarsi basi flavi: alæ limpidae; squamulæ et nervi fulva; stigma minutum.

Fem.—Caput viride: antennæ nigro-piceæ; articuli 1^{us}. et 2^{us}. ænei: thorax cupreus; latera anteriora cyaneo viridi et purpureo varia: metathorax læte viridis, utrinque purpureus: abdomen nigro-cupreum, basi viride. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{4}$ —1 $\frac{1}{2}$.)

Var. β.—*Fem.* caput cyaneo-viride: antennæ pallidiores; articulus 1^{us}. æneus, basi et subtus fulvus: meso- et metatarsi flavi, apice fusci.

Var. γ.—*Fem.* metathorax cyaneus: mesotibiæ fuscæ.

Found near London.

Sp. 15. Tri. hirticornis. Mas. *Thorax quam præcedentibus brevior, proalis nervus cubitalis radiali angulum obtusorem fingens. Cupreus cyaneo varius, antennæ nigro-piceæ hirtæ, pedes fusci, tarsi flavi, alæ limpidae.*

Caput et thorax cuprea: oculi et ocellique rufi: antennæ nigro-piceæ, pilis fulvis hirtæ; articuli 1^{us}. et 2^{us}. virides: prothorax, metathorax et mesothoracis latera cyanea: abdomen nigro-cupreum: pedes fusci; coxæ virides; femora viridi-fusca; protarsi fulvi; meso- et metatarsi flavi, apice fusci: alæ limpidae; squamulæ et nervi fulva; stigma minutum. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Caput cyaneum: prothoracis discus cupreus.

Found near London.

GENUS—ISOSOMA.

Isos. vacillans. Mas. I. longulo paullo validius, antennæ et alæ latiores.

Atrum: *Eurytomæ* speciebus nonnullis simillimum: antennæ corporis dimidio longiores: prothoraci macula utrinque rufa, minima:

genua et tarsi picea: alæ fere limpidae; nervi nigro-fusci. (Corp. long. lin. $1\frac{3}{4}$; alar. lin. $2\frac{1}{2}$)

May; on grass in woods; near London.

Isos. brevicolle, (Haliday.) Mas. *Præcedenti simile at validius, antennæ crassiores, alæ latiores.*

Atrum: antennæ latae, corporis dimidio paullo longiores: abdomen thorace brevius, fere planum: tarsi nigri: alæ limpidae; nervi picei. (Corp. long. lin. $1\frac{3}{4}$; alar. lin. $2\frac{1}{2}$.)

Found on sand-hills, at Port Marnock, by Mr. Haliday.

Isos. brevipenne. Fem. I. angustato *similis, alæ breviores, angustiores.*

Atrum, angustum: abdomen thoracis longitudine: genua et tarsi picea: alæ subfuscae, breves, angustae; nervi fusci. (Corp. long. lin. 1; alar. lin. 1.)

Found near London.

GENUS—EURYTOMA.

Eur. fumipennis. Mas et Fem. *Atra, tarsi rufi, alæ fuscae.*

Mas.—Antennæ graciles, corporis dimidio multo longiores: genua rufa: alarum nervi picei.

Fem.—Multo brevior et latior. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{2}{3}$ — $1\frac{3}{4}$.)

June; Windsor Forest. New Forest, Hampshire.

GENUS—DECATOMA.

Dec. mesomelas. Fem. *Flava, antennæ metathorax abdominisque dorsum nigra, alæ limpidae, macula apud stigma quadrata minima.*

D. mellea brevior: caput inter ocellos et postice nigro-varium: oculi picei: ocelli rufi: antennæ apice piceae; articulus 1^{us}. flavus: mesothoracis scutum antice utrinque nigrum: ungues et pulvilli picei: alis nervi flavi, maculae fuscae. (Corp. long. lin. 1 — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; oak woods, at Lara in the county of Wicklow; Mr. Haliday. July; near London.

Dec. flavicornis. Mas et Fem. D. planæ *similitudine*, *antennæ flavæ*.

Nigra : oculi ocellique piceo-rufi : antennæ flavæ ; articuli 2^{us}. 3^{us}. et *nervi* 1^{us}. quoque picei : *fem.* caput antice et prothorax utrinque flava : petiolus apice fulvus : pedes picei ; trochanteres genua et tarsi flava : alæ limpidæ ; nervi flavi ; maculæ sublunatæ fuscæ, apud stigma quadratæ obscuriores. (Corp. long. lin. $\frac{3}{4}$ —1 ; alar. lin. 1—1 $\frac{1}{4}$.)

June ; oak woods, at Lara in the county of Wicklow ; Mr. Haliday.

Dec. aspilus. Fem. *Nigra, subtus fulva, alæ immaculatæ.*

Caput antice et subtus fulvum : oculi ocellique piceo-rufi : thorax subtus fulvus : prothoracis latera fulvo varia : abdomen subtus fulvum, basi supra utrinque fulvo maculatum : pedes fulvi ; femora et tibiæ nigro cingulata : alæ limpidæ ; nervi flavi, ad costam obscuriores. (Corp. long. lin. 1 ; alar. lin. 1 $\frac{1}{4}$.)

June ; Isle of Wight.

GENUS—CALLIMOME.

Call. rudis. Fem. C. quadricolori *similis at angustior, antennæ quoque et pedes graciliora.*

Viridis, parum nitens : caput inter ocellos mesothoracisque scutum viridi-ænea : oculi ocellique rufi : palpi flavi : antennæ nigræ ; articulus 1^{us}. flavus : abdomen nigro-æneum, basi fulvum : oviductus abdomine dimidio longior : alæ fuscæ ; nervi concolores ; stigma parvum. (Corp. long. lin. 1 $\frac{1}{4}$; alar. lin. 2.)

June ; near London.

Call. Angelicæ. Fem. C. Geranii *coloribus at trientis tantum magnitudine.*

Torymus abdominalis ? *Boheman, Kongl. Vetens. Acad. Handl. för år 1833.*—"Habitat in Smolandia ad Anneberg rarius."

Viridis, nitens, subtus cyaneo-viridis : caput et mesothorax viridi-ænea : antennæ nigro-fuscæ ; articulus 1^{us}. flavus, apice supra

fuscus: gula flava: abdomen cupreo-æneum; segmentum 1^{um}. flavum, basi viride: oviductus corpore paullo brevior: pedes flavi; meso- et metatarsis traminei, apice fuscæ: alæ limpidæ; nervi flavi; stigma concolor, minimum. (Corp. long. lin. 1—1 $\frac{1}{4}$; alar. lin. 1 $\frac{1}{2}$ —1 $\frac{5}{8}$.)

Var. β .—Mesothorax viridis.

Var. γ .—Metapedum femora et tibiæ fulva.

Found by Mr. Haliday, on *Angelica sylvestris*, at Holywood, in Ireland.

ART. II.—*Wanderings and Ponderings of an Insect-Hunter.*

SERIES THE SECOND.

CHAPTER I.

[The Insect-Hunter speaketh of Darenth and Greenhithe.]

WHEN I awoke the sun was high in the heaven. My companion of yesterday was gone; he had been out for hours. I had never before been on the spot; I knew nothing of the ground; however, I marched up the lane, and entered the wood. In this lane, be it recorded, I took *Drilus flavescens* and *Leptura 6-guttata*, besides a great number of *Criorhina oxycanthæ*, which till now I had never seen, and I well recollect how much I was struck by their velvety backs and beautiful appearance. Almost immediately on entering the wood there is a high sandy bank to the left; when I now first saw this bank, the beams of a cloudless sun fell full upon it, and the bees were at work mining it in all directions. I soon scrambled up nearly to the top. The black *Anthophora* was throwing the loose sand behind her from an exquisitely round hole, which she was digging with all her energies, whilst her white-nosed partner was pendulizing over and about her like a sentinel on guard. The sand-wasps were flitting about and entering their burrows, and the gorgeous

golden wasps were eagerly running over the whole surface of the bank, going in and out of the various holes in search of some occupants by which they might insidiously deposit their eggs.

After surveying this lively scene for some time, making an occasional capture of a brilliant *Chrysis*, I turned round, and saw three of that elegant butterfly, *Paphia*, sailing round in circles beneath me, their spotted wings shone on, and brightened by, a most glowing sun. I thought I had never seen any thing more lovely. They were beautifully fresh, and perhaps had that very morning burst from the chrysalis, and were for the first time essaying their powers of flight. By patient waiting, and much labour, I made them all my own, and then regretted my success; they did not appear half so beautiful when pinned in a collecting box as when sailing on sunshine in the full enjoyment of their liberty. Well does Crabbe call this butterfly a "*silvery queen*;" he surely was an entomologist.

Leaving this bank, the heat of which began to be almost unbearable, I struck more deeply into the wood, delighted beyond measure at the infinite diversity of insect forms which filled my boxes; at last, after the lapse of many hours spent in racing after every insect I saw on the wing, I found myself completely tired out; I was in a heat approaching to fever; hungry and thirsty to an extreme; and, last and not least, I had no knowledge whatever of the way, nor knew I by which path I came into the wood, or by which path I could get out. I sat down and pondered. What, thought I, is the most rational course I can pursue? it is three o'clock, the sun must be getting south-west; *there* must be the north, and if I march through the wood northward, without turning right or left, I must, before long, reach the Dover road; the river cannot be many miles to the north of me, and the Dover road must be between me and the river. Keeping this arrangement of localities constantly in view saved me from a hungry night in the woods, which, had there been no sun, I should probably have endured. I proceeded till the country opened before me; a corn-field appeared on the right, and a-head of me were fields and woods, and the placid Thames, speckled with vessels. Crossing a lane, in which I took some half-dozen of the beautiful

little scarlet frog-hopper, *Cercopis vulnerata*, I entered a chalk-pit, a very little chalk-pit, but a very productive one; here I took among other insects that pleased me exceedingly, a whole row of the brilliant beetle *Cryptocephalus lineola*, and from a dead snake I procured a multitude of carrion-beetles of all sorts and sizes. I reached Greenhithe as the sun was setting, and procured the needful restoratives.

Greenhithe is a remarkable place: its immense chalk-pits strike the beholder with wonder; what labour must there not have been in the excavation! a town of considerable magnitude, with its churches, tall spires, and stately towers, might be concealed therein from the passer by. As it is, numerous cottagers have settled there, have fenced in their garden, and cultivated fields of corn. The view over these pits from above, the precipitous steepness and the tortuous margin of their banks, and the broad Thames flowing beyond them, cannot fail to arrest the notice and attract the admiration of the most cursory beholder, while their contents amply repay the entomologist. The finest view is from the corner nearest to Gravesend, almost close to the turnpike-road. Crossing the road at this spot, into a scrubby, bushy kind of meadow, you are on the almost sole locality within many miles of London of the spider orchis, *Ophrys aranifera*; it is every year found here in the early spring, but botanists have pursued it with such vigour that it is now nearly exterminated. In the chalk-pits *Ophrys anthropophora*, and many other *Orchideæ*, are very abundant.

CHAPTER II.

[The Insect-Hunter at Paris; he visiteth the Jardin du Roi; he commenteth thereon; he returneth to England by night, and pondereth by the way.]

In London the collector of insects is supposed, at least by the many, to be insane: in Paris it is quite the reverse—he is considered a philosopher. The Insect-Hunter was not only respected, but met with every assistance. The year had moved onwards; it was September; and *Lathonia* was flying in swarms in that most elegant, most sentimental, most tasty,

and most French of all cemeteries, Père-la-Chaise. The Champs de Mars was alive with *Gryllidæ*. The Champs Elysées and Bois de Boulogne abounded in autumnal insects. In the garden of the Tuileries, flying about the China-asters, was the deep blue *Xylocopa*. This bee never comes into our colder, damper island. Be it also noticed that the China-asters in the garden of the Tuileries are magnificent; but at all seasons these gardens are a blaze of bloom; but let us pass to the Jardin du Roi. Here science seemed to predominate over beauty.

Our Zoological Gardens are the nearest approach that this country has ever made to the Jardin du Roi at Paris; but there is a difference between them that time will never remove. The Jardin du Roi has the various merits of the Zoological Gardens, the Botanical Garden at Chelsea, the British Museum, and the Museum of the College of Surgeons, united in one. In Regent's Park the garden is a pretty garden, and the flowers are pretty; and in this an approach is made to the garden of the Tuileries, but only an approach—the orange trees, the marble basin, the tasty fountain, the elegant statues, the effect, the *tout ensemble*, is wanting. In the Jardin du Roi there is no attempt at beauty, but every attention paid to science. The plants are arranged, and in accuracy of nomenclature are above, far above, an Insect-Hunter's praise, and far above his comprehension. If we compare the live stock, the English collection scarcely equals the French; the feline animals with us are very inferior. But our giraffes, our *four* giraffes! I had forgotten them. Certainly mine eyes never before beheld a sight so splendid: the graceful, snake-like flexibility of those long necks, and the statue-like repose of their usual attitude, are alike superb, and are worth a menagerie of lions and tigers. Throughout this vast and comprehensive establishment (the *Jardin des Plantes*) there appears to be every endeavour to place the animals in a situation as near to a state of nature as possible; they all look exceedingly healthy, clean, and in good condition, and the greatest possible space consistent with safety is allowed them. Much care has been exercised also in the feeding department. It has been ascertained that some of the carnivorous animals are most healthy, and most inclined to increase in bulk, if only fed once in several days. The jaguar is an animal remarkable for the

excess of this peculiar power, and will eat at a single meal sufficient to support him for a week. In the wild solitudes of which he is a native, he probably is equally abstemious during the time of repletion. The cage system for the feline animals exists here as elsewhere; it would be evidently dangerous to keep them in any other way. Day after day the Insect-Hunter visited this interesting place, and always found something new, something worthy of observation, that had before escaped him. He could almost have been willing to take up his abode in Paris for the pleasure of continually visiting the Jardin du Roi.

Sunday in Paris every one knows is a complete holiday. A few of the Parisians go to mass in the morning, and only a few, but in these few there is more appearance of sincere religion than we even meet with in our large congregations. The attenders of mass, however, are generally of the working classes: the lowest tribe of mechanics, or people from the country—men in blue frocks, and women in the high caps of Normandy and Bretagne. These people are scattered about the churches, kneeling most devoutly on the cold stones. In the afternoon all is gaiety. In September, during three successive Sundays, is a fair at St. Cloud. Thither the Insect-Hunter repaired, mixed in the scene, and enjoyed it with the rest. A person of the name of Charles was in the crowd, moving continually from place to place; staying for a moment before the beautiful water-works, then surveying the youngsters who rode in the wooden roundabouts. Charles approached the Insect-Hunter, who pressed forward to see him. "A bas les chapeaux!" shouted the gigantic Swiss mercenaries. There was Charles, and a little laughing boy in the costume of a colonel of guards, and a sweet, smiling woman holding the latter, that he might not fall out of the carriage. These three persons, a king, a prince, and a duchess, have since that time risen into notice, have played a conspicuous part in the politics of the day, have disappeared, and are forgotten. *Sic transit gloria mundi!*

France is a merry nation, a restless nation, a dancing nation. Of all people the Insect-Hunter has seen, the French dance the best, and walk the worst. The grace with which the peasants and the lower class of tradespeople dance beneath the fine old trees at St. Cloud is unequalled by any class

in England. Judging from appearances, I should say, the French women never attempt to diminish the natural size of the waist; and this freedom allows the elegance and elasticity of the frame to display itself advantageously. Nature is seldom improved by alteration; deformity may be concealed, I grant, but the alteration of a symmetrical form induces deformity: an unnaturally slender waist is, in my opinion, as great a deformity as a hump back.

Dear reader, I know very well this has little to do with entomology, but you must not suppose that I can write on and on always on the same subject. Nobody ever got any thing by playing on one string except Paganini. I shall be very entomological by and by; but I must have my talk out on any subject that comes uppermost. Well! the netted gates of Paris opened to receive the "cuckoo" that brought back the Insect-Hunter from St. Cloud. He alighted, and strolling through the Place Louis XV. entered the garden of the Tuileries by moonlight. The mass of palaces rose before me against a cloudless sky; old, and in my opinion ugly, is the whole mass, but interesting and noble, and by moonlight somewhat imposing. We say that in London the monarch has no residence worthy of a king; for my own part, I think Paris little better off in this respect. If a Frenchman should whisper, "Versailles," I reply "Windsor:" one is as much in London as the other in Paris.

From Calais you start at a certain time of tide, let the hour be what it may, or the wind blow as it pleases. It was midnight, and the wind having blown hard several days there was a heavily rolling sea. The steamer started, and as the wheels dashed aside the waves, they seemed to kindle into light; it became a sea of fire. I leaned over the vessel's side, and thus I pondered:—"Now for a lecture of the luminosity of the ocean." Gentle reader, no such thing. The "luminosity of the ocean" and the "humming in the air" are favourite themes, I know, and therefore I should perhaps be pardoned if I were to scribble a few "conjectures" on these subjects; but they have neither at present happened to disturb my peace of mind; I have never looked on them as riddles. While the countless tribes of summer are a-wing, why should we imagine it mysterious that there is a humming in the air? While multitudes of luminous atoms inhabit the ocean, why should it

be strange that the ocean itself is luminous? If the pseudo-philosophers were to manage their wonder aright, they would temper it with adoration rather than sophistry.

CHAPTER III.

[The Insect-Hunter becometh an Author.]

Shortly after my return from France I became an author, a very important era in a man's existence, and one not likely to be forgotten. It was the practice occasionally to read original essays at the meetings of the Entomological Club, (which had not then a Magazine of its own,) and I composed and read my maiden essay. I was recommended to publish it, and with considerable coyness I consented. A mutual friend, a sort of stepping-stone in the wide gulf between me and the great editor of a magazine, undertook to hand it to the latter personage. Shall I ever forget the next magazine-day? with what impatience I hastened to Paternoster-row—with what glee I laid out three shillings and sixpence—with what tremor I cut the leaves, with what eagerness I skimmed over the whole number without any previous reference to the "contents"—with what disappointment I found that my contribution had been omitted! Another magazine-day came and went in like manner; a third, and a fourth, and still my *invaluable* contribution did not see the light; fourteen shillings had been laid out in the hopes of having my vanity gratified, and I began to feel cool on the subject, and resolved not to buy any more. It is the right way to be indifferent; the number which I did not buy contained my essay, or rather a portion of it. The editor had cut it in pieces at the paragraphs, and published about half the paragraphs in a lump as a complete article; the remainder served as occasional stopgaps for the next twelvemonth. By this sage device the connexion, or rather the brains, were completely knocked out of my essay; and proud as we always are of our own performances, I must confess I think mine far below par. I have since wished a hundred times that it had been burnt by the editor rather than thus

mutilated; but it was my first-born, and I read and re-read it with infinite complacency, although it was so altered I could scarcely myself understand it: this was my first attempt with the public.

CHAPTER IV.

[The Insect-Hunter visiteth Wales. Black Mountain. Llanthony.]

SEVEN years had rolled over the head of the Insect-Hunter since his first wanderings in Darenth Wood—seven whole years—a large portion of human life! And what had I been doing? Creating myself enemies. I had written myself into fame. I was feared by many, yet feared none; I was hated by many, yet hated none; I was persecuted by many, yet persecuted none. Reader, if thou art not an author, resolve never to be one. Of all parts that we can play in this world, that of an honest author is the most dangerous. It were better for an honest man never to write. I look upon it as a thing impossible for a man to write honestly and not give offence. After the offence is taken comes the retort—the revenge: a passage misquoted, a fact mistated, and a thousand other petty annoyances. Sometimes the same attack, clothed in various language, defiles half a dozen different periodicals. Honesty has no remedy for this: it cannot wield the same weapons.

Such were my ponderings as I traversed the lofty ridges of the Black Mountain for the fourth time in the summer of 1835. Far as the eye could reach there was no trace of the handy-work of man,—nothing but one wild, boundless waste of heather, interspersed with the bright young green of the whortleberry, the blossoms of which were the resort of myriads of bees. That fine humble bee, *Bombus regelationis*, was in tolerable abundance; and from the rapidity of its flight, and the inequalities of the ground, gave us much trouble and amusement in its capture. I should have explained that I was not now alone. I had two companions,—one the dreader of

dogs, the cynophobist before described, the name of the other appears in your Magazine, and I do not care to repeat it here—I will call him the grouse-shooter. The high ridges of the Black Mountain, more especially those which stretch out like promontories towards the town of Hay, are in a state of perpetual moisture. Thousands of little ponds, or maunpits, varying from five to thirty yards in circumference, are scattered over the surface of the ground. The water is perfectly clear; but being, I suppose, strongly impregnated with iron, it stains every thing immersed in it with a bright rust-coloured tint. Each pond has generally six to eighteen inches of water, and three to five feet of the blackest mud. I took *Colymbetes collaris* in great abundance in these ponds. It was very pretty to watch them paddling about on the mud, at the bottom of the water, and rising occasionally to the surface to renew their bubble of air. So luxuriant has been the growth of the heath, *Calluna vulgaris* more especially, that the masses of it not unfrequently completely met over those little pools, hiding them from the sight; and in pursuing the rapid bees, (*Bombi*,) it was by no means uncommon for one or the other of us suddenly to disappear in one of the pitfalls; and in answer to the halloos of his comrades, for—

“ Though lost to sight, to memory dear,”

he would slowly emerge, dripping with wet, and plastered with mud.

We took little in the way of entomological rarities, with the exception of the *Bombus* above-mentioned, and a single specimen of *Hadena glauca*: we found a very large female of the Emperor moth, which I mention, as proving its being an inhabitant of these high grounds. The red grouse is abundant on this mountain, and is carefully preserved; they rise with a strong and rapid whirr, stretch out the neck to an extreme length, and almost invariably utter their peculiar call when on the wing. After traversing the mountain four hours, in a somewhat southerly direction, we arrived at a rude hut, built of rough stout stones, piled together in a most careless manner. I believe this was formerly used as a resting-place by the grouse shooters, or a refuge for them in storms, but it is now too ruinous to shelter any human being. Just below this hut rises a stream of the most delicious water, as clear as crystal; and

as the grouse shooter was provided with that article commonly called a pocket pistol, containing mountain dew, we thought we could not do better than seat ourselves on some large flat stones by the stream, and diluting the mountain dew with the mountain stream, refresh ourselves with the mixture. While seated, and quietly smoking our cigars, (strike that out, Mr. Editor, if you please,) numbers of a small black *Telephorus* crawled over our clothes—I believe it is *T. Æthiops*; and a single specimen of that very common fly *Eristalis vulpinus* hovered over us, and settled on a dry stone in the middle of the tiny stream; and this identical feat he persevered in for at least fifty times; at last I caught him in my bag-net, reasoned with him on the risk he ran, and throwing him up in the air, was amused to see him settle again on the very same stone.

The sight, or even the vivid remembrance of particular spots, brings to mind almost invariably particular conversations which have occurred there. I well recollect a remarkable instance of this. I travelled outside a coach, a journey of about thirty-five miles, with a most agreeably talkative companion, and returned to London with eleven other outsiders, but perfectly alone. Well, every morsel of the conversation was brought to mind at the precise place at which it had been uttered. In the present instance, the very circumstance of writing in this chit-chatty way about the streamlet on the Black Mountain recalls more forcibly to my mind a remarkable history which was related on the spot by the grouse shooter: it was the history of the Dragon of Mordiford, and will range more properly further on. I will entitle a chapter “Legends of Lugge.”

The tale was told; the Insect-Hunter and his companions resumed their way and their occupation, and walked on and on over the almost interminable mountain, leaving the heights of Macnamara, with their snow-filled defiles, far to the right.

We noticed frogs of an enormous size, exceeding by more than one half any I have seen elsewhere; the colours on their backs were peculiarly varied and vivid, and beneath they were beautifully red. *Elater cupreus* abounded occasionally on tufts of long grass which marked the presence of some little spring. There was no butterfly of any rarity from one end of the mountain to the other; abundance of the little *Pamphilus*, and occasionally a specimen of *Napi*, were all that we saw. *Geometra atomaria* was flying in great abundance;

and *Dolerus niger* was on every blade of grass. The surface of the mountain became dry and solid as we advanced, without pools or springs, occasionally without heath, and with scarcely any vegetation, the ground being strewn with loose stones. Under these we hunted for beetles, but without success.

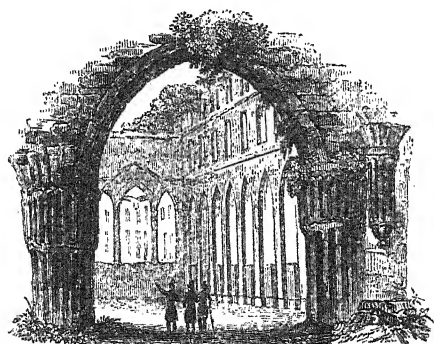
A magnificent valley, the Vale of Ewias, was now opening before us, and the beautiful and abrupt rock with which it terminates became distinctly visible; at last, about five o'clock in the afternoon, we looked down on the giant ruins of Llanthony, the hoped-for haven in which to obtain food and rest. We found the descent most wearisome and tedious; at last, with slipping, and sliding, and tumbling, I grew quite disheartened, and sat down; when, lo and behold, the effect was like a ship-launch,—off I went as a vessel from the stocks; and, seeing my advantage, I held my legs clear of the ground, waved my insect-net in the air, and trusting to chance for a rudder, proceeded with incredible rapidity, cheered by the diminishing shouts of my receding companions. The turf of this slope is short and smooth, but abounds rather too much with a species of thistle (called, I believe, *Carduus acaulis*,) to be very comfortable for this mode of progression.

When my companions at last reached me, I was catching *Melitæa Euphrosyne* in a beautiful meadow enamelled with flowers—a meadow which extended to the very walls of Llanthony.

Llanthony is one of those speaking monuments of the olden time, that assure us not only of the wealth but of the taste of the Romish church in days that are by-gone. It stands in the very bosom of the Black Mountain, the enormous and rounded masses of which rise on its every side. Luckily this beautiful spot has no road approaching it sufficiently macadamised to admit the passage of the luxurious vehicle of the opulent ruin-hunter; it is not, therefore, and never can be, the rage of the tourist. Few, very few, have seen it; few, very few, know of its existence. A portion of the Abbey is converted into an inn: what was perchance a buttery is now a kitchen, and what was a jovial lay brother is now (if Pythagoras conjectures aright) a jovial landlord; the incarnation of mirth and good humour; he may perhaps have passed the years intervening between the states of priest and publican as a fox, a bee, and a raven, being all the time a free wanderer over the scenes in

which he still delights. He spread the table for the Insect-Hunter and his friends. The venison pasty, the brown ale, the sack, and Rhenish, were produced and despatched; at least, let me say, viands and diluents which stood in the stead of these. Then the party rose, and leaving the buttery, entered the grand, but roofless hall; they passed along its whole length in silence, and beneath that spacious arch they turned to gaze upon its beauty. The moon was up, and threw an unclouded blaze of light into the interior, silvering the velvet turf, which now, instead of marble, floored the hall. They stood silently in the black shadow of the arch—and their silence was expressive—it told how deeply they were impressed with the beauty of the scene.

There is something far more satisfying in the silent gaze of admiration, even though in the presence of those whose voices and whose words have at other times delighted us, than in the most appropriate expressions talent could devise or feeling suggest.



ART. III.—*Essay on Parasitic Hymenoptera.*

By A. H. HALIDAY, M. A.

(Continued from Vol. III. page 147.)

GEN. X.—ROGAS.

Palpi maxillares 6-articulati; labiales 4-articulati. Mandibulæ prominulæ apice videntulæ, a clypei margine concavo distantes, interjectâ rimâ fere circulari. Labrum inflexum trigonum. Occiput marginatum. Alæ anticæ areola disci-antica remota. Ala postica nervo recurrente disci ducta (modo non omnibus.)

Adnot.—Neesii ab Esenbeckio Monographia Ichneumonidum Adscitorum, opus summopere desideratum cujus autem expectatio spem fidemque promissorum jam pæne eluserat, inter alia studia præclari auctoris omissum et abjectum fuisse sæpe dolebam, quum præludia ista evolverem quibus ille lustris abhinc quinque Acta Bevolinensia ditaverat. Eo gratius affulsit nuper opus illud de novo instauratum, castigatum, plurimis auctum, quibus subsidiis Ichneumonologia Europæa absoluta quodammodo fuisse videbatur. Quod e manibus nondum perfrixerat,—et ecce Wesmaelius hujus vestigia premeus protulet Monographiam Braconidarum Belgicorum, industriæ, solertiæ, judicii monumentum amplissimum. Vir inelytus a Methodo Neesii, et recentiorum fere quot in hoc campo decertarunt, absistens, Systematis vetustioris Latreilliani auspicia partim revocavit; et illa palporum computatione (lubrica sane et difficili) posthabita, ad apertiora quædam affinitatis discrimina se contulit. Unde maxima scientiæ adjumenta petenda fere spero. Malim tamen (pace viri tanti dixerim) palporum normam non penitus neglectam, quam ipse expertus sum in dubiis sæpe lucem afferre, de Generibus constituendis et disponendis ubi agitur; etsi Generum characteres artificiales quantum licet e faciliore materia ducendos concedo. *Rogades* nostros et *Bracones* Genuinos una in tribum *Cælostomæ* Wesmaelius consociavit, propter oris fabricam rima fere circulari patentis inter mandibulas prominulas et clypei elevati marginem. Palporum vero ratio discrepans, indicibus sat constantibus structuræ reliquæ stipata,

dictrotomiam hujus tribus me judice commendat. Etenim *Bracones* a vicina *Agathidum* distrahi posse vix mihi persuadeo. *Rogades* ex adverso cum *Opiis* (Wesmaelii, quod genus mihi pridem *Gnamptodon* audiebat) arctissimo vinculo conjuncti, viam recta pandunt in *Alysias*.

Bracones Genuini a *Rogadibus* *Heteroclitis* plerisque discrepant occipite immarginato, metathorace lævi, abdominis segmentis singulis discretis, valvula ventrali acuminata adpressa, alæ anticæ areolis brachialibus absolute conterminis, posticæ nervo recurrente disci deficiente, areola vero brachiali posteriore pererigua. — *Rogades* Genuini et *Ademon* statura tota, aculeo recondito, alisque dispari modo areolatis longe discrepant ab illis. — *Opii* a *Colastis* lineâ nulla certa disjuncti sunt. — Helcontes dignoscuntur areola disci antica contigua oreque clauso — *Dyscolus lancifer* (sp. ined.) *Rhyssali* fere speciem mentitur, sed accuratius perspectus differt ore clauso et insuper nervo recurrente illo deficiente in alæ postica, cujus areola brachialis posterior major est ratione anterioris; quæ omnia palporum computatione firmata huic insecto locum proprium vindicant. — Aphidii pauci (i.e. Subg. *Ephedrus* m. quod Wesmaelio *Elassus*) *Colastis* non valde dissimiles sunt prima facie; sed multiplici discrimine gaudent, vel oris ratione neglecta; scil. abdominis incurvatilis incisura 2^{da}. flexili, aculeo brevissimo compresso, valvula ventrali suffulto, alæ posticæ areola brachiali unica, &c. Penuria exemplarium in hoc Genere maxime obfuit mihi, quum pauculæ tantum species in hoc angulo terrarum vulgo obviæ sunt. Quas angustias multum adlevavit vir amicus Franciscus Walker, qui seriem locupletissimam Braconidarum Angliæ liberali manu ad me transmisit. Multa præterea Clm. Curtisii benevolentiae indefessæ debeo.

TABULA SYNOPTICA SUBGENERUM.

<p><i>Alæ anticae areolae cubitales</i></p> <p>tres; <i>abdomen</i></p> <p>subsessile; <i>segmenta</i> imm. et 2^{um}.</p> <p>haud perfecte sejuncta; <i>alæ</i></p> <p>maris feminae conformes; <i>alæ anticae nervus, parallelus</i></p> <p>prope limites posticos areolae disci posticae</p> <p>oriens; <i>caput</i></p> <p>transversum; <i>abdomen</i></p> <p>cubicum</p> <p>compressum, terebrâ brevius.</p> <p>depressum subaequalia</p> <p>terebrâ longius; <i>segmenta</i></p> <p>3-antica maxima, reliqua minuta</p> <p>lanceolatum</p> <p>perquam attenuatum</p> <p>incisurâ profundâ discreta; <i>alæ anticae stigma</i></p> <p>haud perfecte sejuncta; <i>alæ</i></p> <p>maris feminae conformes; <i>alæ anticae nervus, parallelus</i></p> <p>prope limites posticos areolae disci posticae</p> <p>oriens; <i>caput</i></p> <p>transversum; <i>abdomen</i></p> <p>cubicum</p> <p>compressum, terebrâ brevius.</p> <p>depressum subaequalia</p> <p>terebrâ longius; <i>segmenta</i></p> <p>3-antica maxima, reliqua minuta</p> <p>lanceolatum</p> <p>perquam attenuatum</p> <p>incisurâ profundâ discreta; <i>alæ anticae stigma</i></p>	<p>posticae stigmatum crasso auctae</p> <p>feminae conformes</p> <p>petiolatum</p> <p>posticae maris stigmatum crasso auctae</p> <p>prope limites anticos areolae disci posticae oriens; <i>antennae</i></p> <p>multiarticulatae</p> <p>12-articulatae</p>	<p>IV. HECAEOLUS.</p> <p>[V. PAMBOLUS.]</p> <p>I. SPATHIUS.</p> <p>[III. HETEROFILUS.]</p> <p>VII. HORMIUS.</p> <p>VI. CHREMYLUS.</p> <p>II. DORYCTES.</p> <p>VIII. RHYSSALUS.</p> <p>IX. COLASTES.</p> <p>X. CLINOCENTRUS.</p> <p>XI. ROGAS.</p> <p>XII. ADENON.</p>
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Subgen. I.—SPATHIUS.

Alæ anticæ areolæ cubitales tres, 2^{da}. nervum recurrentem excipiens. Caput cubicum. Abdomen depressum ovato-orbiculatum, petiolo gracili lineari, terebra longa.

Spathius *N. ab Es. Act. Acad. IX.*
301. Gen. III.

—— *N. ab Es. Monogr. I. 11.*
Gen. III.

*Bracon, Fam. II. Heterocl. I. *N. ab Es. Berl. Mag. V. 24.*

——, spp. *Spinola, Ins. Lig.*

Cryptus, spp. *Fab. Syst. Piez. — Panzer*
Fna Germ.

Ichneumon, spp. *Schranck, Villars, Rossi,*
Thunberg, &c.

Caput globoso-cubicum, occipite lato truncato, fronte depressa late declivi, oculis parvis, ocellis in triangulum valde approximatis. Mandibulæ perbreves trigonæ apice leviter bidentes: palpi longi graciles; labialium articulus 3^{tus}. 4^{to}. vix brevior: antennæ longæ graciles multi articulatae, scapo brevi ovato-obconico, pedicello minuto globoso, articulis flagelli interioribus longis filiformibus, exterioribus longitudine decrescentibus: thorax oblongus utrinque parum attenuatus; mesothoracis dorsum sulculis ordinariis postice concurrentibus; scutellum linea porcata discretum: metathorax rotundato-declivis subtiliter areatus, solito longior, ideoque areæ dorsales longiores sunt postice oblique attenuatae, area interjecta apicis angusta rhombica aut pentagona, fere in illarum medium usque incurrente: abdominis segmentum 1^{um}. petiolum gracilimum depresso-cylindricum conficit: abdomen reliquum ambitu fere ovale, planiusculum; segmenta 2^{dum}. et 3^{tium}. vix discreta sequentium longitudinem æquiparant: pedes mediocres, femoribus validis clavatis: alæ anticæ stigma oblongo-lanceolatum cubitum e medio emittens: areola cubitalis secunda angulo posteriore baseos valde attenuato et introrsum producto nervum recurrentem recipit: ejusdem nervus interior anteriori fere æqualis: areolæ brachiales fere conterminæ, nervus parallelus^a prope limites anticos areolæ disci-posticæ oritur (quæ res *Hormii* affinitatem indicat:) alæ posticæ nervus recurrens disci manifestus; areola brachialis-posterior perexigua (ut in *Bracone*) $\frac{1}{4}$

^a Nervus parallelus postremus e nervis qui longitudinaliter in alæ marginem exteriorum excurrunt.—*Vid. Wesmael. Monogr. Brac. Belg. p. 18.*

Bracon Sphærocephali spp. . . . *N. ab E. Monogr.*

Adnot.—*Inopia* materiæ coactus subgenus valde incompositum relinquo. Prima species proprium fere vindicat. Sunt equidem omnes affines *Spathio*, *Heterospilo* et *Hecabolo*, a reliquis *Heteroclitis* differunt maxime capite longiore.

Sp. 3. *R. D. obliteratus*. *Nigro piceoque varius, tibiis basi albidis; alarum stigmatibus punctisque tribus brunneis, nervo recurrente interstitiali; "feminae terebra abdominis longitudine."* (Long. corp. $1\frac{3}{4}$ — $2\frac{1}{2}$; alar. 3—4 lin.)

**Bracon obliteratus* . . . *N. ab E. Monogr. I.* 104, No. 62.
Macrocentrus maculipes . *Curtis, Guide G.* 546, No. 5.

Caput punctulatum pubescens, oculis parvulis, fronte subtilissime rimuloso, facie lata confertim punctulata punctis 2 impressis fere contiguis in basi clypei brevissimi: mandibulæ parvæ: maxillæ lobus ut in *Hecabolo* trigono-acuminatus: palpi maxillares prælongi, articulis 2 baseos ratione reliquorum perparvis, 3 ultimis rectis filiformibus; labialium articulus 1^{mus}. obconicus; 2^{dus}., 3^{tius}. ovati breviores; 4^{tus}. binis antecedentibus conjunctim æqualis, linearis, basi subito attenuatus: antennæ maris corpore longiores articulis circiter 35, omnibus post 2^{dum}. cylindricis: thorax elongatus, utrinque attenuatus, collari conspicuo, mesothoracis dorso punctato opaco pubescente, sulcis postice leniter convergentibus, lobo medio canaliculato: metathorax attenuato-declivis, confertim punctatus; areæ dorsales magnæ, oblongæ, apice nonnil divaricatæ, basi lævigatæ; area interjecta inter illas vix incurrens et reliquæ apicales perparvæ: abdomen maris longitudine capitis thoracisque, oblongum utrinque attenuatum, latitudine maxima pone medium, et ano rotundato: segmentum 1^{um}. latitudine apicis fere triplo longius, basi lenissime attenuatum, punctato-reticulatum, medio fere rugulosum lineisque 2 manifestioribus antrorsum divergentibus postice oblitteratis: segmenta 2^{dum}. et 3^{tium}. indiscreta, conjunctim 1^{mo}. paulo longiora, punctato reticulata hujus margine postico lævissimo; reliqua lævissima vel proxima basi tantum punctulata: pedes sat longi femoribus validis: color totius corporis fusco-piceus, antennarum insertionem, scutelli regione et pleuris medio rufescentibus at indeterminatè; abdominis segmenta 3^{tium}. et sequentia margine postico fulvescunt splendore fere electreo: abdomen plerumque medio

dilutius est et caput fere nigrum: tibiæ basi et trochanteres albidī: alæ fumato-hyalinæ stigmatē brunneo, punctisque tribus in area cubitali: stigma oblongo-lanceolatum cubitum e medio emittens: nervus recurrens interstitialis: areolæ cubitales 2^{da}. et 3^{tia}. indiscretæ inter se propter nervum interjectum decolorem: brachiales conterminæ: alæ posticæ areola brachialis posterior dimidio anterioris brevior. *Feminam* non vidi; terebra longitudine est abdominis secundum Neesium.

Habitat Germaniam N. ab E.—Angliam, minus frequens: exhibuerunt *J. Curtis* et *F. Walker*.

Adnot.—*Bracon fuscatus* N. ab E. Mon. I. 106, No. 63, huic valde affinis et congener.^b

^b Sp. 3^b. *R. D. flaviceps*. Fem. *Rufo-castaneus capite pedibusque flavo-ferrugineis abdominis segmentis* 1^{mo}. et 2^{do}. *rugoso-striatis; terebra abdomine longiore.* (Long. corp. 1½; alar. 2⅔ lin.)

R. H. Quæstori Fem. Prima facie simillimus sed abunde distinctus: de mare nil constat, sed verisimile est alas hujus fore conformes *feminæ*: caput lævissimum flavo-ferrugineum, ocellis fuscis: antennæ fusco-ferrugineæ articulis 2 baseos flavo-ferrugineis: mutilatæ sunt: thorax fere qualis *R. Quæstori* sed metathorace magis obtuso: nitidus est vage punctulatus, pilisque longis albidis aspersus: metathoracis areæ dorsales læves nitidæ, postice rotundatæ; area interjecta vix ad illarum medium provecta, metathorax reliquus punctato reticulatus: abdomen oblongum utrinque parum attenuatum, segmentis 1^{mo}. et 2^{do}. rugoso-striatis, reliquis lævibus: segmentum 1^{um}. latitudine apicis brevius est et antrorsum parum attenuatum, carinulæ baseos utrinque, mox desinente: 2^{dum}. et 3^{tium}. subæqualia, linea arcuata obsoletissima discreta, hoc linea transversa punctata bipartitum; reliqua lente decrescunt: pedes medii perbreves quales fere *Heterospilo* sed tibiæ tarsique postici longiores: terebra rufa apice fusca: alæ fumato-hyalinæ stigmatē ovato-lanceolato nervisque brunneis, radice et squamulis ferrugineis: nervus recurrens fere interstitialis vel apici summo areolæ cubitalis 1^{mæ}. insertus: alæ posticæ areola brachialis posterior ½ anterioris longitudine.

Habitat Insulam Sti. Vincentii. *F. Walker* communicavit.

Subgen. III.—HETEROSPILUS.

Alæ anticæ areolæ cubitales tres, 1^{ma}. et 2^{da}. fere indiscretæ, nervus recurrens interstitialis: alæ postica maris stigmatè crasso aucta: caput cubico-transversum: abdomen subsessile depressum, segmentis 2^{do}. et 3^{tio}. indiscretis, reliquis sensim decrescentibus, terebra exerta.

Sp. 4. H. D. striatellus. Fem. *Niger pedibus rufis, tibiis basi albis; abdominis segmento 1^{mo}. et 2^{di}. basi rugulosis; terebra abdominis longitudine.* (Long. corp. $2\frac{1}{2}$; alar. $4\frac{3}{4}$ lin.)

Bracon striatellus, N. ab E. Monogr. I. 107, No. 64.

Frons lævis: antennæ filiformes (mutilatæ sed supersunt articuli 35) articulis 1^{mo}. et 2^{do}. piceis, reliquis nigris cylindricis, 3^{tio}. et 4^{to}. subæqualibus: palporum maxillarium articuli 3 exteriores prælongi filiformes: labialium articulus 2^{us}. vix longior 3^{io}. hic et sequens, qui longior, filiformes: mesothoracis sulci rugulosi, effusi ante scutellum: metathorax rotundato declivis; areæ dorsales oblongo-quadratæ postice rotundatæ antrorsum læviusculæ; reliquæ minus distinctæ ob sculpturam rugulosam: abdomen oblongo-lanceolatum dorso planiusculum: segmentum 1^{um}. oblongum basi perparum attenuatum, latitudine apicis vix paulo longius, longitudinaliter rugulosum, carinulis baseos tantum inchoatis: segmenti 2^{di}. et 3ⁱⁱⁱ. limites vix apparent; illud fere totum rugulosum rufo-piceum; reliqua lævissima: pedes validi rufi tibiis basi albidis: tarsus anticus tibiâ duplo longior, medius brevis: unguis parvi: alæ hyalinæ radice ochraceo squamulis fusco piceis, nervis stigmatèque fuscis: stigma oblongo lanceolatum cubitum vix ante medium excipiente: nervus recurrens areolæ cubitali 1^{mæ}. insertus; areolæ cubitales exteriores propter nervum decolorem confusæ; brachialis-posterior anteriore longior: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris vix longior.

Habitat Italiam N. ab E.—Angliam perraro, vidi unicum exemplar tantum.

Sp. 5. H. D. Imperator. Fem. *Niger abdominis medio pedibusque rufis; tibiis basi albis; abdominis segmento 1^{mo}. striato; terebra corporis longitudine.* (Long. corp. 3; alar. $5\frac{1}{2}$ lin.)

Præcedenti simillimus sed satis distinctus: frons supra antennis, facies, genæ punctato rugulosæ: antennæ basi latius rufescentes,

praesertim subtus; articuli interiores flagelli longiores, 3^{tus}. 4^{to}. longior: metathorax fere totus crasse rugosus: abdomen longius lanceolatum: segmentum 1^{um}. sesquilingius quam latius, concinne striatum, foveolis lateralibus baseos sat profundis, adjacente carinula acuta mox desinente; reliqua laevissima fascia rubra a basi 2^{di}. in medium 3^{ti}. effusa: reliqua fere praecedentis: alarum stigma piceo ferrugineum.

Habitat in Anglia. *J. Curtis*.

Sp. 6. R. D. tabidus. Mas. *Fusco-piceus pedum geniculis pallidioribus, abdominis segmento 1^{mo}. ruguloso.* (Long. corp. 1 $\frac{1}{4}$; alar. 2 $\frac{1}{2}$ lin.)

Praecedentibus sat affinis: caput laevissimum: antennae corpore paulo longiores 29-articulatae: palpi fusco pallidi breviores quam illis, labialium articulo penultimo minore: metathorax punctulatus, area interjecta minuta inter dorsales vix incurrente: abdominis segmentum 1^{um}. sesquilingius quam latius, antrorsum parum attenuatum, rugulosum; reliqua laevia pallidiora: pedum statura fere eadem: trochanteres, tibiae tarsique basi depallescens: alae hyalinae nervis stigmatumque fuscis: alae posticae areola brachialis-posterior $\frac{1}{2}$ anterioris longior est.

Habitat prope Londinum lectus.—*F. Walker*.

Adnot.—*Bracon nobilis* N. ab E. Monogr. I. 61 No. 16 forsitan huc potius collocandus quam inter *Helcontes*.—*Br. leucogaster* N. ab E. Monogr. I. 98, No. 57. *Rogas* esse videtur; an hujus loci, aut cum *Rhyssalo* consociandus? an potius subgeneris proprii?^c

^c Sp. 6^b. R. Het. Quæstor. *Ferrugineus, capite pedibusque flavescentibus; fem. terebra dimidii abdominis longitudine.* (Long. corp. 1 $\frac{1}{4}$; alar. 2 $\frac{1}{2}$ lin.)

Caput transversum-cubicum, totum aut fronte tantum subtiliter transversim aciculatum, flavo-ferrugineum: ocelli valde approximati in puncto fusco: oculi sat magni, orbiculati, sinu levi excavati prope antennarum: facies longe villosa: clypeus parvus punctis 2 approximatis impressus: mandibulae apice fuscæ: palpi graciles villosi pallidi: antennae longae graciles pubescentes, ferrugineae articulis longis cylindricis, 1^{mo}. et 2^{do}. brevibus flavis; (mutatae equidem at supersunt articuli 21:) thorax oblongus utrinque rotundatus, subtiliter squameus, ferrugineus nonnunquam fusco-inumbratus: mesothoracis lobus medius longitudinaliter depressus, carinula laterali sulcos

Subgen. IV.—HECABOLUS.

Alæ anticæ areolæ cubitales duæ; ala postica maris stigmatæ crasso aucta: caput cubicum: abdomen maris lineari-lanceolatum; feminæ lineari-clavatum, terebra elongata.

Hecabolus, *Curt. Br. Ent.* 507.

Sp. 7. R. Hec. sulcatus. *Niger abdomine piceo, antennis pedibusque ferrugineis, antennis apice, coxis posticis basi et femoribus late fusciscentibus; fem. terebra corpore longiore.* (Long. corp. 2—2½; alar. 3—3½ lin.)

decurrente: sulci punctati concurrunt in foveam porcatam ad basin scutelli: metathoracis areæ dorsales postice rotundatæ, area interjecta magna rhombica fere in illarum basin usque porrecta: areæ dorsales squameæ sicut, metathorax reliquus reticulatus et vage pilosus: abdomen obovato-lanceolatum, lenissime fornicatum, ferrugineum, nonnunquam castaneum linea flava transversa in medio segmenti 3^{ti}. et sequentium: segmentum 1^{um}. apice quam basi duplo latius latitudine apicis vix longius; lineæ 2 elevatæ e foveis basalibus in apicem excurrunt, retrorsum paulo convergentes, area interjecta punctata et striis paucis elevatis insignita, laterales confertim striatæ: secundum cum 3^{ti}o. connatum et confertim striatum, hujus campo postico lævi lineâ transversâ subarcuatâ a campo striato disjuncto: reliqua segmenta lævia sunt vel basi subtiliter punctulata: terebra dimidio abdominis vix longior, valvulis fuscis: pedes pallide ferruginei villosi: intermedii perbreves tibiis basi curvatis: femora valida: coxæ posticæ crassæ obconicæ, basi angulatæ: alæ hyalinæ radice et squamulis pallide-flavis, stigmatæ fusco-testaceo basi et apice pallescente: stigma sat crassum trigonum: nervus recurrens interstitialis areolæ cubitalis 2^{dæ}. angulus posterior introrsum valde productus sed nervus illam a prima segungens hyalinus est et nervo anteriore longior: areolæ longitudo postica anticam duplo excedit: nervi brachiales in apice areolæ disci-posticæ concurrunt in cuspidem, unde nervus parallelus oritur: alæ posticæ areolæ brachiales perparvæ, antica ½ alæ longitudinem non attingens, postica illâ plus duplo brevior. *Maris* ala postica ut in Hecabolo stigmatæ crasso corneo aucta.

Habitat in Insula Sti. Vincentii. *F. Walker* communicavit.

* *Hecabolus sulcatus* . *Curt. Br. Ent.* 507.

Spathius sulcatus . . *Curt. Guide. G.* 545, No. 5.

Caput supra læve nitidum fronte subdeclivi subtiliter rimulosa, facie quadrata transversum subtiliter rugulosa, oculis parvis: antennæ corpore breviores, 24 aut 25-articulatæ flagelli articulis cylindricis striatis: maxillæ lobus oblique attenuatus, trigonus: palpi fere quales *Dorycti striatello*: thorax oblongo-ovatus postice magis attenuatus: mesothoracis sulci crenati in campum late rugoso-reticulatum dorsi medii concurrentes; lobus medius scuti antrorsum obtusus; scutelli regio etiam rugoso-reticulatus ipsius apice lævigato: metathorax attenuato-declivis totus rugoso-reticulatus nec areatus: abdomen *feminae* a basi retrorsum sensim incrassatum, apice fornicato-rotundatum segmentis 1^{mo}. 2^{do}. 3^{tio}. longitudine decrescentibus et latitudine crescentibus; segmentum 1^{num}. vix duplo longius quam latius apice fere duplo latius quam basi, ante medium obsoletissime tuberculatum, striatum interstitiis punctulatis; 2^{dum}. et 3^{tium}. dimidium anterius pari modo exculpta; reliqua lævissima: pedes breves: femora prævalida: tarsi medii perbreves, articulo 1^{mo}. brevior quam 5^{to}., intermediis subovatis: stigma-elliptico lanceolatum cubitum e medio emittens: areola disci-antica longe remota; radialis oblongo-lanceolata apicem alæ attingens; cubitalis 1^{ma}. apice nervum recurrentem excipiens, 2^{da}. angulo posteriore baseos attenuato: nervus parallelus e brachiali anteriore sinu excurrit, areola disci-postica deinde brevi spatio aperta: alæ posticæ areola brachialis posteriore anterioris.

Mas differt antennis paulo longioribus, abdomine versus apicem attenuato, lineari lanceolato, alæ posticæ stigmatibus crasso fusco areolas brachiales fere implente.

Corpus nigrum aut nigro-piceum, litura ad utrumque oculum et in genis picea: abdomen piceum medio dilutius: terebra rufa apice fusca: antennæ rufo-ferrugineæ apice fuscae: pedes ferruginei coxis posticis basi, femoribus fere totis et apice summo tarsorum fuscis: alæ fumatæ stigmatibus nervisque fuscis, radice et squamulis ferruginosis.

Habitat Angliam: mecum communicaverunt *J. Curtis* et *F. Walker*.

"In larvis *Ptilini pectinicornis* sobolem procreat."—*D^{nus}. T. G. Rudd*, in *Curtis Br. Ent.* 1. 1.^d

^d Subgen. V.—PAMBOLUS.

Areolæ cubitales duæ: nervus parallelus prope limites anticos areolæ disci-posticæ enatus: caput transversocubicum:

Subgen. VII.—HORMIUS.

Areolæ cubitales tres, secunda nervum recurrentem excipiens : nervus parallelus interstitialis : abdomen ovale planum segmento 1^{mo}. perbrevis marginato, 2^{do}. 3^{tio}. imperfecte sejunctis, terebra exerta : caput transverso-cubicum.

Hormius. Sect. I. *N. ab E. Act. Acad. IX.*
305. *G. X.*

————— *Monogr. I. 152.*

————— *A.H.H. Ent. Mag. I. 266.*

* Bracon. Fam. III. Heterocl. B. *N. ab E. B. M. V. 35.*

Sp. 9. R. Hor. moniliatus. *Metathorace nigricante reliqui corporis colore variabili ; fem. terebra $\frac{1}{2}$ corporis longitudine.* (Long. corp. $1\frac{3}{4}$; alar. $2\frac{3}{4}$ lin.)

Hormius moniliatus . *N. ab E. Monogr. I. 153. No. 1.*

Bracon ————— . *N. ab E. Berl. Mag. V. 36. No. 56.*

Tab. II. fig. 11.

Caput transverso-cubicum rugulosum, occipite plano vix angustato, acule marginato, oculis prominulis : antennæ capite cum thorace longiores, articules 18—20 in *femina*, pluribus usque ad 24 in *mare*, et huic fere corpori æquales : articuli flagelle omnes cylindrici subæquales, exteriores magis discreti : palpi mediocres ; maxillarium articulus 3^{tius}. binis antecedentibus conjunctim brevior, ultimus apice attenuatus : ratio longitudinis hæc fere $4\frac{3}{5} : 12$: labialium articulus 3^{tius}. brevior ovatus : thorax oblongus utrinque parum attenuatus, lævis nitens : mesothoracis sulci in foveam rugulosam concurrunt : scutelli basis foveâ geminâ punctato-reticulatâ discreta : metathorax rotundato-declivis, reticulato-rugosus : abdomen exacte ovale, planum pelluceus, limbo et segmentorum marginibus subincrassatis : segmentum 1^{um}. latius multo quam longius lateribus depressis, campo medio quadrato ruguloso ; 2^{dum}. 3^{tio}. fere duplo longius linea impressa interrupta imperfecte sejunctum, linea laterali impressa in basin cum adversa arcuatim concurrente : segmenta 4^{tum}.—6^{tum}. longitudine subæqualia, sequentia minora : terebra perbrevis pubescens : pedes longiusculi graciles : stigma oblongo-lanceolatum, cubitum ultra medium emittens : areola cubitalis 2^{da}. nervum recurrentem excipiens in angulo interiore valde attenuato, propter nervum interiorem obliquatum et anteriore longiorem : nervus parallelus cum nervo brachiali-anteriore

continuus ideoque in limitibus ipsis areolarum disci enatus: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris brevior.

Variat multum coloribus.

Var. a.—Rufo-ferrugineus metathorace nigro antennis apice segmenti 1^{mi}. campo medio et pectore fuscis: pedes testacei: alarum stigma pallidum. *N. ab E.*

Modo pedes, alarum stigma flavo-testacei, antennæ basi testaceæ.

Var. β.—*Mas* orbita, collari rufo-piceis; abdomine fusco-testaceo medio flavo-pellucido; alis amplis hyalinis.

Var. γ.—*Fem.* abdomine flavo-testaceo, segmenti 1^{mi}. medio fusco; alis amplis pallidis.

Var. δ.—*Fem.* fusco-piceus orbita rufescente, alarum vitta fuscescente.

Var. ε.—*Fem.* idem sed alæ parvæ antennæ perbreves 18-articulatæ.

Modo femora postica v posteriora, cum coxis fusca; orbita thoracisque lituræ dorsales rufo-piceæ; abdominis segmenta posteriora fusca: alæ pallidæ vitta distincta fuscescente.

Var. ζ.—Alarum stigmatæ testaceo.

Var. η.—Alarum stigmatæ fusco.

Habitat Italiam, Germaniam, *N. ab E.*—Angliam, F. W.—Hiberniam minus frequens.—In trunco putrido quercus *Neesius* invenit; forsitan itaque Coleopteris Xylophagis infestus est, ut congeneres. Varietatis *α.* exemplar nullum inter nostratia mihi obvium fuit.

Adnot.—Species altera *H. dimidiatus* *N. ab E.* Monogr. I. 155. No. 2, nobis invisus Germaniam habitat.

Subgen. VIII.—RHYSSALUS.

Areolæ cubitales tres: abdomen subsessile segmentis 2^{do}. et 3^{tio}. connatis, feminae compressum terebra longa: caput transversum.

Rhyssalus, *A. H. H. Ent. Mag.* I. 266.

Sp. 10. R. R. clavator. *Piceus abdominis medio pedibusque ferrugineis; alarum stigmatæ angustissimo; metathorace attenuato; mas tibiis posticis clavatis fuscis; fem. antennis fulvis, terebra suberecta corpore brevior.* (Long. corp. 1—1 $\frac{3}{4}$; alar. 2—3 $\frac{1}{2}$ lin.)

Caput cum oculis protuberantibus thorace latius, pone illos attenuatum: antennæ feminae corpore parum longiores fulvescentes

apice fuscae 25—26-articulatae, articulis flagelli interioribus longis exterioribus cito decrescentibus, tribus ultimis conjunctim 3^{ti}. longitudinem vix superantibus, ultimo acuminato precedente vix longiore; *maris* corpore dimidio longiores articulis 2 baseos ferruginosis, 25—33-articulatae: palpi longi graciles; labialium articulus penultimus minutissimus rotundus: prothoracis collum parvum, antice recta truncatum, pone hoc constrictum: mesothoracis dorsum in medio qua sulci punctati concurrunt, punctatorugosum, utrinque carinula antica abrupta sulcos decurrente: metathorax attenuatus rugoso-reticulatus, areatus; area media elongato-rhombica inter dorsales tota longitudine incurrente: abdomen *maris* lineari-clavatum, segmento 1^{mo}. fere lineari et triplo longiore quam latiore, ante medium obsolete tuberculato, nitido ruguloso, marginibus elevatis linea impressa discretis; segmenta reliqua fusco picea postrema obscuriora: *feminae* breve deltoideum, compressum, apice truncatum, segmento 1^{mo}. validiore quam *maris*, posterioribus brevissimis carinatis; 2^{do}. 3^{tio}. et 4^{ti}. basi fulvescentibus, sequentibus fuscis, tunc 2 ultimis ferrugineis: terebra abdominis thoracisque longitudine, suberecta: pedes ferruginei, femoribus subclavatis, *maris* tibiis posticis crassis clavatis et basi demta fuscis: alae subfumato-hyalinae radice et squamulis dilute ochreis, stigmate ochreo-fusco, nervis fuscis: stigma tenuissimum cuneiforme, cubitum ultra medium excipiens: nervus recurrens interstitialis: areolae cubitalis secundae nervus interior valde obliquus anteriori aequalis: nervi brachiales valde approximati in apice areolae brachialis, quae anteriorem superat: alae posticae areola brachialis posterior $\frac{1}{2}$ anterioris vix longior.

Habitat in nemoribus umbrosis Angliae et Hiberniae passim nec infrequens.

Adnot.—Quum species sequens ab hac pluribus discrepet, et Colastis affinis sit, hanc pro typo subgeneris profero.

Sp. 11. R. R. Indagator. *Niger pedibus ferrugineis, femoribus tibiisque posticis apice fuscis; metathorace obtuso; fem. terebra longitudine corporis.* (Long. corp. $1\frac{1}{2}$ —2; alar. $3\frac{1}{4}$ — $3\frac{3}{4}$ lin.)

Caput hujus postice minus attenuatum, oculo minus prominuli: antennae *feminae* crassiores nigrae 33-articulatae articulis flagelli interioribus arctius contiguis et brevioribus, 3^{tio}. duobus ultimis conjunctim vix longiore; *maris* 39-articulatae articulis 3^{tio}. et

ultimo subæqualibus: os ferruginosum palporum labialium articulus 3^{tus}. perparvus ut in præcedente: thorax brevior, collari obtuso, carinulis humeralibus ut in illa, sulculis punctatis effusis in foveam porcatam: metathorax brevior, obtusangulus; areæ dorsales postice oblique divaricatæ, area interjecta in medium illarum usque incurrente: areæ dorsales læves, apicales subtiliter transversim striatæ, laterales rugoso-reticulatæ: abdomen oblongum minus compressum et dorso planiusculum sed thorace angustius; segmento 1^{mo}. oblongo, basi vix attenuato, nitido striato, lineis 2 elevatis retrorsum parum convergentibus, margine laterali non acute elevato, tuberculis minutissimis ante medium, segmenta reliqua lævissima in *mare* nigro-picea; posteriora *feminæ* brevissima lineari-transversa: terebra horizontalis, corpore fere longior: pedes ferruginei aut ochrei, coxis posticis basi, femoribus tibiisque iisdem apice, tarsis apice, posticis fere totis fuscis: alæ fumato-hyalinæ radice fusco-picea, squamulis nigris, nervis stigmatibus que nigro-fuscis: stigma duplo latius quam præcedenti: nervus recurrens apici areolæ cubitalis primæ insertus: 2^{da}. minor nervo anteriori et interiori æqualibus: nervi brachiales latius distantes nervi axillari-recurrentis rudimentum ante apicem areolæ brachialis: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris longitudine.

Habitat prope Londinum lectus.—*F. Walker.*

Subgen. IX.—COLASTES.

Areolæ cubitales tres: nervus parallelus prope limites posticos areolæ disci-posticæ enatus: caput transversum abdomen subsessile depressum segmentis 2^{do}. 3^{to}. connatis, posterioribus longitudine sensim decrescentibus: terebra exerta abdomine brevior.

Colastes, *A. H. H. Ent. Mag.* I. 266.

Occiput his subtiliter marginatum et nonnihil concavum est: antennæ ut plurimum graciles, corporis circiter longitudine: palporum labialium articuli in plerisque longitudine subæquales; in *R. lanceolatore* 3^{tus}. brevior est et cum 4^{to}. arcte conjunctus, unicum elongato-fusiformem referens,—in *R. funesto* 3^{tus}. perparvus est ut *Rhyssalis*: thoracis sculptura lævior est quam antecedentibus, mesothoracis sulculi sæpius tenuissimi, impunctati, ante scutellum concurrunt: segmenta abdominis 2^{dum}. et 3^{tum}. valde indiscreta sunt inter se, in *R. catenatore* solo lineâ crenatâ sejuncta: pedes ut plurimum longi graciles: stigma plurisque lanceolatum, in

R. braconio magis elongatum quod in *Opiis* fieri solet : nervus recurrens areolæ 1^{ma}. vulgo insertus, in *R. braconio* et *R. lanceolatore* interstitialis, in *R. funesto* solo areolæ mediæ insertus : areola brachialis posterior anteriorem superat : alæ posticæ nervus recurrens disci in *R. Mediatore* deficit ; areola brachialis posterior $\frac{1}{2}$ anterioris longitudinem fere attingit : *Opii* cum his proxime cohærent, sed discrepant capite latiore, occipite retuso, oris rimâ transversa, mesothoracis sulculis interruptis vel oblitteratis, multi præterea areola cubitali media longiore, nervique recurrentis insertione ; tamen *O. comatus* Wesm. quoad hæc fere omnia intermedius est : O propter sculpturam crassam *Rogadibus* magis conformis, stigmate alarum elongato, aliisque notis *Opiorum* propriis gaudet.

Sp. 12. *R. Col. Mediator. Mas. Niger palpis pedibusque ferrugineis stigmate fusco ; abdomine brunneo, segmento 1^{mo}. nigro : alæ posticæ nervo recurrente deficiente.* (Long. corp. $1\frac{3}{4}$; alar. $3\frac{1}{2}$ lin.)

Caput fere hemisphericum, thoracis latitudine : antennæ 31-articulatæ, corporis longitudine : thorax elongatus, utrinque attenuatus, nitidus vage pubescens, metathorace parce rugoso-reticulato, areis minus conspicuis, area interjecta inter dorsales non incurrente : abdomen lineare, antrorsum sensim attenuatum : segmentum 1^{um}. latitudine apicis sesqui-longius, basi duplo angustius, paulo ante medium tuberculatum, carinis 2 acutis in medio dorsi concurrentibus et dehinc in apicem continuis : reliqua superficies nitida subtiliter rugulosa : segmenta reliqua lævia, brunnea margine obscuriora : pedes longi pubescentes ferruginei : alæ subhyalinæ radice et squamulis ferrugineis ; nervis stigmatæque brunneis : stigma oblongo-lanceolatum cubitum in medio excipit : alæ posticæ areola brachialis-posterior $\frac{1}{2}$ anterioris vix longior ; nervus recurrens in disco nullus.

Habitat prope Londinum lectus. — *F. Walker.*

Sp. 13. *R. Col. fragilis. Fem. Niger, palpis pedibusque sordide ochreis ; alis infumatis ; terebra brevissima.* (Long. corp. $1\frac{1}{2}$; alar. $2\frac{1}{2}$ lin.)

Caput thorace paulo angustius, subglobosum, lævissimum : antennæ fere corporis longitudine graciles 24-articulatæ : thorax elongatus utrinque attenuatus collari angusto ; mesothoracis lævissimi sulculis

tantum inchoatis; metathorace scabriculo: abdomen oblongo-lanceolatum, segmento 1^{mo}. perbrevis scabriculo seu punctato-exasperato, absque carinulis: segmenta reliqua lævissima, fusco-picea: terebra brevissime exerta: pedes ochrei: alæ angustæ, infumatæ stigmatibus nervisque fuscis: stigma elliptico-lanceolatum in medio cubitum excipiens: nervi brachiales medio approximati: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris brevior.

Habitat prope Londinum lectus.—*F. Walker.*

Sp. 14. R. Col. braconius. *Niger antennæ basi, palpis pedibusque silaceis; alarum stigmatibus lineari-lanceolatis, testaceo, cubitum ante medium excipiente; nervo recurrente interstitiali; fem. terebra $\frac{1}{2}$ abdominis longitudine.* (Long. corp. $\frac{3}{4}$ —2; alar. $1\frac{2}{3}$ — $4\frac{1}{2}$ lin.)

Colastes braconius ined. *A. H. H. Ent. Mag.* I. 266.

Caput thorace angustius, subglobosum: antennæ corpore longiores, graciles, basi pallide flavescentes: thorax oblongus utrinque attenuatus, mesothoracis sulcis in depressionem latam rugulosam ante scutellum effusis: metathorax attenuato-declivis confertim punctulatus, pubescens, areis obsoletis: abdomen elliptico-lanceolatum, lateribus medio deflexis in femina (ut in *Braconibus Microcephalis*) segmentum 1^{um}. parvum obconicum, latitudine apicis longius, striolatum nonnunquam carinula media instructum, foveisque 2 contiguas pone medium in lineam transversam sitis: sequentia lævissima: terebra segmento 1^{mo}. longior: pedes graciles silacei: alæ hyalinæ stigmatibus flavo-testaceo vel pallide-flavo: stigma lineari-lanceolatum, cubitum in triente prima excipiens: nervus aream cubitalem postice designans sæpe incrassatus: nervi brachiales valde approximati: alæ posticæ brachiales-posterior $\frac{1}{2}$ anterioris brevior.

Variat autem magnitudine et colore.

Var. α.—Majores. (Long. corp. $1\frac{3}{4}$; alar. $3\frac{2}{3}$ lin.): antennæ 30-articulatæ: caput, thorax, abdominis segmentum 1^{um}. nigra; segmentum 3^{tium}. et nonnunquam proxima fulvescentia, reliqua fusca: mas gracilior, antennæ longiores et basi latius flavescentes: abdomen lineari-clavatum segmento 1^{mo}. sublineari.

Var. β.—Maximus. (Long. corp. 2; alar. $4\frac{1}{2}$ lin.) *Var. α.* similis sed abdominis segmentum 2^{dum}. tantum fuscum, sequentia fulvescentia.

Var. γ.—Minores. (Long. corp. $\frac{3}{4}$ —1; alar. $1\frac{2}{3}$ — $2\frac{1}{3}$ lin.) Antennæ 22—24-articulatæ: corpus fusco-piceum, abdominis medio dilutius: pedes adhuc pallidiores, fere albidi: sculptura metathoracis et segmenti 1^{mi}. subtilior: *mas, fem.*

Habitat in lucis umbrosis Angliæ, Hiberniæ, passim frequens.

Sp. 15. R. Col. Lustrator. *Mas. Niger palpis pedibusque pallide flavis; abdomine fusco-medio ferrugineo; stigmate fusco cubitam ultra medium excipiente.* (Long. corp. $1\frac{1}{4}$; alar. $2\frac{1}{3}$ lin.)

Caput nigrum nitidissimum ad antennarum insertionem nonnil protuberans: antennæ corpore fere longiores 29-articulatæ, fuscae basi dilutius: thorax niger nitidus; mesothoracis lobi singuli convexi; sulculi punctulati; metathorax punctulato-rugulosus: abdomen oblongum planum; segmentum 1^{um}. paulo longius quam latius, medio leviter striolatum fuscum, margine laterale apicis subdepresso flavescens: segmenta intermedia ferruginea, 2^{um}. basi media subtilissime striolatum; posteriora obscuriora: pedes pallide flavo-ferruginei, tarsorum apice summo fusco: alæ angustæ, hyalinæ, stigmate magno elliptico fusco: nervus cubitalis propius apici insertus quam reliquis.

Habitat in Hibernia boreali mihi semel lectus.

Adnot.—Discrimen certissimum hujus e fronte protuberante alis angustis, stigmate crasso et cubiti insertionem.

Sp. 16. R. Col. lanceolator. *Niger antennis basi, palpis pedibusque flavo-ferrugineis; stigmate sordide flavescens, cubitum medio excipiente; nervo recurrente interstitiale; abdominis segmento 1^{mo}. et 2^{di}. basi rugulosis; tibiis posticis subsinuatis; fem. terebra dimidii abdominis longitudine.* (Long. corp. $1-1\frac{1}{2}$; alar. $2\frac{1}{2}-3\frac{1}{2}$ lin.)

Bracon lanceolator, N. ab E. Monogr. I. 92, No. 53.

Caput brevius transversum, occipite contracto facie subtiliter punctulata, medio subcarinata; oris rima fere semicirculari: antennæ femine corpore breviores, 20—25-articulatæ, fuscae basi flavescens, pedicello extricato, et articulis exterioribus solito magis discretis (ut in *Hormio*) maris graciliores, corpore vix breviores: mesothoracis sulculi læves, in depressionem confertim punctatam

et pubescentem exeunt ante scutellum: metathorax rugoso-reticulatus, areis dorsalibus postice rotundatis et nonnunquam lævigatis: abdomen obovato-lanceolatum; segmentum 1^{um}. oblongum antrorsum vix attenuatum, latitudine apicis sesquilongius, rugulosum, prope basin tuberculatum, angulis apicis margine depresso membranaceo auctis: segmenta reliqua sæpe fusco-picea; secundum nonnunquam ferrugineum margine laterali et postico determinate fusco; basi aut fere totum rugulosum; reliqua lævia: terebra dimidii abdominis longitudine, apice subattenuata et decurva, ferruginea, apice fusca: pedes mediocres: tibiæ posticæ ante medium gibbulæ ideoque manifestius extrorsum sinuatæ quam spp. cætt.: variant pedes colore, *modo* toti flavo-ferruginei tarsis apice subfuscis, *modo* coxæ posticæ basi fuscæ; tum *maribus* tibiæ vel etiam femora postica aut posteriora apice fusca sunt vel tibiæ mediæ totæ hujus coloris: tibiæ *maris* posticæ apice paulo crassiores esse videntur: alæ hyalinæ radice et squamulis flavo-ferrugineis, nervis fuscis stigmatibus sordide flavo, vel ochraceo: stigma magis informam anguste trigonam effictum, cubitum perpaulo ultra medium excipit: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris paulo longior est.

Habitat Germaniam *N. ab E.*—Angliam sat frequens: *F. Walker.*—
In Hibernia nonnisi rarissime mihi obviis fuit, etiam per Ebrides Insulas.

(*To be continued.*)

ART. IV.—*Observations on certain curious Indentations in the Old Red Sandstone of Worcestershire and Herefordshire, &c.* By JABEZ ALLIES, ESQ. one of the Council of the Worcestershire Natural History Society. London: Edwards. Worcester: Lees.

READER! there are times and seasons with us all when it is scarcely within the compass of our ability to follow out the dictation of even a reasonable wish; when the spirit may be fully aware of the necessity of acting, yet may not be empowered to act. Such times and seasons await us all: how needful then is it that when strong we trust not to our present strength, saying that that strength will continue till to-morrow. To-morrow has no existence. What we think worthy to be

done, should be done to-day ; for we know not that we shall be able to accomplish it at any future time. We are not, however, about to persevere in this sad strain ; we are not lachrymose, and least of all men are we lack-a-daysical ; yet be it known that we scorn the coward who fears to pen sober truisms, especially when such truisms have been recently and deeply pressed on his attention. Reader ! these observations have forced themselves on the writer from circumstances which in all probability thou wilt never know ; to thee, rejoicing in health, they may be as chaff ; to the writer they are the treasured result of daily and nightly thought. "Somewhat too much of this : " we would not make thee melancholy ; and if our article contains a tinge, however slight, of melancholy, trust us not again.

In our hand is a book containing 132 pages, scarcely one of which can be read without a smile. Whether it was the intention of the author thus to make us smile, it is not in our power to say. When he gravely "submits" that "the twelve signs of the Zodiac are hieroglyphics of the antediluvian patriarchs ;" when he ekes out the number twelve by making Eve a patriarch, and "submits" that *Pisces* is the sign representing Noah, from that patriarch's celebrated voyage on the waters of the deluge, and, we opine, his consequent proximity to the *fishes* ; we hesitate whether we are to believe Jabez Allies, Esq. to be in earnest or in jest ; whether his book, like Dr. Ure's, is an attempt to prove an exact accordance between the facts disclosed by geology and the pages of holy writ ; or whether it is intended as a burlesque on those who are engaged in this arduous work. It is too ludicrous for the former, it is too serious for the latter. Jabez Allies, Esq. reminds us of an excellent *raconteur*, who keeps the whole table in a roar while his own countenance remains unmoved.

The book, though, as before stated, containing but 132 pages, treats of at least as many totally different subjects ; we give a few consecutive "cases"—"fish-bones—remains of rhinoceros and mammoth—St. Catherine—St. Augustine's oak—effects of certain noxious plants on cattle, and the speedy remedy—a stratum of coal at the Berrow-hill—an ancient camp there—a body of evidence relative to the *ignis fatuus*—old English black rats—dry rot—Turkish oaks, *Valonia*," &c. &c. ; indeed the *et ceteras* might be prolonged for whole lines.

The preface, which is in fact a table of contents, thus concludes: "The facts and evidence relative to each *case* are detailed as minutely as possible, in order that, should my learned readers not be satisfied with my conclusions, they may be enabled to draw their own deductions therefrom." This is certainly considerate, and we avail ourselves, as "learned readers," of the license here given, and express our dissatisfaction and dissent from the conclusion that the sign of the Bull represents Eve: "our own deduction therefrom" is—no, we will not publish it.

It will be obvious to our readers that we cannot enter a critique on all the "cases," contained in the book of Jabez Allies, Esq.; it has been proved possible that one man possessed sufficient knowledge to write on all these "cases," but surely it cannot be supposed that any other should be sufficiently accomplished to review him. We candidly acknowledge, that with ourselves the attempt would be idle. We are learned in the "Lives of the Saints," but we are ill versed in the bones of fish; we are amateurs in ancient camps, but utterly ignorant of black rats. We will consider one "case" only, that of St. Catherine.

In a stained glass window, in the church of West Wickham, in Kent, is a notable effigy of St. Catherine; she is represented as wearing a coronet, marvellously like that of an English duke, with its strawberry leaves, &c. complete; her left hand supports a sword fit for a giant, and a book probably intended for the Bible; her right hand is tracing the lines of the book she is reading. Beneath her feet is the Emperor Maxentius, crown, sceptre, and purple robe. The emperor is thus punished through an infinity of ages, because whilst St. Catherine and himself were both tenants of this perishable clay, he caused her head to be removed from the shoulders which it adorned.

"This saint," says William Hone, "is in the Church of England calendar and almanacks. It is doubtful whether she ever existed; [how painful to hear such doubts expressed!] yet in mass books and breviaries we find her prayed to, and honoured by hymns, with stories of her miracles so wonderfully apocryphal, that even Cardinal Baronius blushes for the threadbare legends. In Alban Butler's memoirs of this saint it may be discovered, by a scrutinizing eye, that while her

popularity seems to force him to relate particulars concerning her, he leaves himself room to disavow them; but this is hardly fair, for the great body of readers of his 'Lives of the Saints' are too confiding to criticise hidden meanings. 'From this martyr's uncommon erudition,' he says, 'and the extraordinary spirit of piety by which she sanctified her learning, and the use she made of it, she is chosen in the schools the patroness and model of christian philosophers.' According to his authorities, she was beheaded under the Emperor Maxentius, or Maximinus II. He adds,—'she is said first to have been put upon an engine made of four wheels joined together, and stuck with sharp pointed spikes, that when the wheels were moved her body might be torn in pieces.' The 'Acts' add, that at the first stirring of the terrible engine, the cords with which the martyr was tied were broken asunder by the invisible power of an angel, and the engine falling to pieces by the wheels being separated from one another, she was delivered from that death: hence the name of St. Catherine's wheel.'"

This St. Catherine our author supposes not to be his St. Catherine. "I am satisfied that the St. Catherine in question could not be the same as is said to have been born at Alexandria at the latter end of the second century, and suffered martyrdom under the Emperor Maxentius (and whose wheel is so celebrated) as upon consulting my *Clavis Calendaria*, by Brady, it does not appear that the Egyptian saint was ever in Britain." Our author here admits the existence of two St. Catherine's; this is much better than Hone, who doubts of even one; as for ourselves, we would admit three, four, yea even five, rather than there should be the slightest hitch in the theory of Jabez Allies, Esq. Indeed we have excellent evidence of a third St. Catherine, whose sphere of existence in this world was confined to the London side of Worcester, and the immediate vicinity of our author's habitation, and after whom a whole catalogue of Catherine nomenclature has arisen, beginning with Catherine-hill, the residence of Thomas Newman, Esq.; Catherine-villa, the seat of the learned Jabez Allies, Esq.; Catherine-cottage, Catherine-house, Catherine-row, Catherine-street, Catherine-place, &c. &c.

We must give Jabez Allies, Esq. the benefit of a doubt he has expressed as to the veracity of the legend of St. Catherine:

"I am not going to support that fiction," says he, "however ingenious it may be," &c. (p. 2); yet it appears to us that every subsequent fact related, or argument urged, tend to support the "fiction" in question. We must proceed with the history itself:—"A person, said to be a girl with a pair of pattens on, having stolen St. Catherine's mare and colt, and led them down several brooks to avoid detection—the saint, upon being informed of her loss, prayed that wherever the animals and thief trod the marks of their feet might be left; and that in answer to this prayer the prints of the animals' feet, and also of the patten rings, were deeply indented, not only in the earth, but also in the stones, wherever they trod, and that thereby they were traced to, and found at Ledbury." Nothing can possibly be more clear: the facts are overwhelming. No sooner were we aware that the Tracks in Teme were thus readily accounted for, than we took a place per Worcester mail, inside, back to the horses, and before ten o'clock the next morning we waited on Mr. Evans, the Secretary of the Worcestershire Natural History Society, and solicited permission to view the miraculous impressions. Mr. Evans, with that cordial politeness which never forsakes him, introduced us to the wonders, and we were convinced! Dr. Buckland—how the name shrinks into insignificance before that of Jabez Allies, Esq.—Dr. Buckland had ventured to express a doubt, indeed he went so far as to suppose that the tracks were softer portions of the stone, and hinted that they might probably be traced below the surface: or, "cavities from which concretions of marlstone and other matter have been washed out by the action of the brook." The stone had been sawn in twain, and the doctor disappointed; the track descended not a fraction of a millimeter into the stone; and the same stone is preserved in the museum, to the eternal honour of Teme, St. Catherine, and Jabez Allies, Esq., and the eternal discomfiture of Dr. Buckland and Roderick Impey Murchison.^a

Jabez Allies, Esq. has of course made several expeditions to ascertain every particular; he has literally waded knee-deep in Teme; of one visit he speaks thus:—"About half-a-mile further down we were shown a stone in the channel of the brook containing several very distinct tracks; namely,

^a "I am confirmed in this opinion by Mr. Murchison, who was here yesterday."—*Buckland*.

two called those of the mare, three of the colt, one rather doubtful track, one patten-ring impression"—“all the said tracks have protuberances corresponding with the frogs of the animals' feet, very finely developed.”—“Some distance further down the brook we found another stone, containing two tracks of the mare blended together, one of the colt,” &c.—“Upon one not very large stone we found a rather worn impression of the mare's tracks,” (p. 16.)—“At Mr. Downes', of the Farm,” they saw “a stone containing one patten-ring impression, one track of the mare, and two of the colt,” (p. 17.) “The colt's track, marked O, is a most excellent impression; the frog of this track is level with the surface of the stone, at the hinder part of it,” (p. 19.) “I must add here, that so distinct are these tracks, even now, that I should as soon be led to believe that a clear representation of the ‘human face divine’ would be produced on various stones by the attrition of the stream, as that such attrition produced these tracks,” (p. 25.) “Here then I take it we have the tracks of antediluvian horses and colts, and of patten-ring impressions. And if so, they clearly prove that this country was not only inhabited, but that it was in a state of considerable civilisation,” &c. (p. 29.)

The reader will perhaps be struck with the alteration of phraseology as the writer warms in his subjects through the pages above quoted; first, we have “*tracks called* those of the mare;” then we have it fairly stated, “one *track* of the mare;” lastly, we have the inference clearly: “Here then, I take it, we have the tracks,” &c., implying that a doubt no longer exists on the subject. We omitted to say that the prints of the mare's feet formerly exhibited traces of shoes with cockers to them, and nails; this, however, does not come as a positive fact vouched for by the author, and therefore he need not have raised a theory touching blacksmiths thereon, proving, as he says, “the use of iron in those remote ages, and the then existence of the blacksmith,” (p. 29.) The patten-ring is quite as satisfactory a proof of the existence both of iron and smith.

We have it then fairly admitted and insisted on, in the Essay before us, that tracks of an animal wearing pattens, and of two horses of very different sizes, one of them supposed to be shod, exist at this day, on the surface of the old red sandstone in Teme, Sapey, Whelpley, and other streams in the

neighbourhood of Knightsford-bridge, on the borders of Worcestershire, towards Herefordshire. We know, and the author knows, and makes no attempt to doubt or disprove it, that these impressions could only be made when the old red sand-stone was plastic, and in the process of formation. All geologists, including the author, admit that this formation of the old red sand-stone took place long anterior to the deluge; "some even contend that it was formed thousands of years previous to the creation of man;"^b (p. 29,) in fact, we are not aware that a single geologist now assigns it a more recent date. Let us attempt to gather into a simple sentence the obvious inference to be drawn from the admissions and assertions of our author, thus :—

Long before the Noachian Deluge, nay, even before the creation of man himself, there existed, in the neighbourhood of Knightsford-bridge, in Worcestershire, in England, some animals which wore pattens, and horses which were shod in the manner practised at the present day; the existence of pattens and horseshoes clearly proving, moreover, the existence of blacksmiths, as the fabricators thereof.

Risum teneatis amici! A word more and we have done. In order to prove that the good people wore pattens long, long before the flood, Jabez Allies, Esq. quotes the book of Job:—" 'It is turned as clay to the seal,' xxxviii. 14. And, unless Job meant the boils with which he was afflicted, it might reasonably be inferred that he figuratively alluded to the patten," (p. 31.) We know not whether Jabez Allies, Esq. ever heard of a *non sequitur*. We opine that the foregoing passage is an apt illustration of the term. We cannot see why, if Job meant not a boil, he meant a patten.

Jabez Allies, Esq. is a man of talent, and a man of much reading; he is one whom the Natural History Society of Worcestershire delighteth to honour; he is looked up to as a philosopher, he is consulted as an oracle, and it is not our wish to diminish his reputation; we are no geologists, but we can take a common-sense view of most subjects. We always have, and always will differ from those who consider the Bible a work on Natural History; and we believe, firmly believe, that those who attempt to prove it such, raise doubts without

^b Mark! the author himself makes this observation, in order to prove the antiquity of the impressions.

removing them; we have always wished them a better employment. Let Teme flow on in all its beauty—in all its crystal clearness. Oh that we were now a tenant of that little house above its fall, listening to the eternal hum of waters! Oh that our eyes beheld that beauteous valley, and all its orchards! Oh that we could now sweep with our net the rich grass along those meadows ere it yields to the unrelenting scythe! Oh that we could wade, with naked feet, adown its bed, and dwell with delight on those curious tracks over which our friend Allies theorises so beautifully, but in vain!

ART. V.—*New Group of Orthoptera, Family of Mantides.*

By M. A. LEFEBVRE. (*Extracted from the Annales de la Société Entomologique de France.*)

THE *Mantides* present forms and exterior anatomical distinctions so marked, that we can no longer leave them connected as they have remained for some years past. Illiger, sensible of the necessity of dividing the genus, was the first to separate, under the name of *Empusa*, those in which the head terminates in an elongated point, and the males are distinguished by pectinated antennæ. But he still left in the genus *Mantis* species as dissimilar, and capable of forming groups as distinct, as the one he had himself created.

Lichenstein was of essential service in describing a portion of the species figured by Stoll, and more especially in pointing out well-ascertained distinctions; but, in the monograph he published in the 6th vol. of the Transactions of the Linnæan Society of London, he proposed no arrangement of genera; and Latreille, in the second edition of his *Familles Naturelles*, did not think proper to establish one, although the generic history of these insects demanded the closest attention of his master mind. At length M. Audinet-Serville, in his *Revue Méthodique des Orthoptères*, published in the 22d vol. of the *Annales des Sciences Naturelles*, rescued this family from the chaos in which it had been so long buried; and from the external organic characters,—taking sometimes the foliaceous membranes observable on the legs of certain species, sometimes the elongation of the head, the swelling

of the thorax, &c.,—he established nine genera; which, added to the two already in existence, raised to the number of eleven the divisions which these *Orthoptera* now range under naturally and conveniently.

Still there was one species which had escaped the attention of this indefatigable and clever entomologist, who would, on no occasion, establish new genera except with the specimens before him, and who did not venture to form an opinion of a species, and *à fortiori* make a new genus from any figure, however correctly drawn.

It was in the account of the Expedition to Egypt, (Pl. 2, *Orthop.*) that the insects of the genus now under consideration were figured for the first time. M. Audouin had been very desirous of furnishing the descriptions to these plates, but, as he informed me, in the absence of every kind of specimens, and having only the engravings, without either the insects or the MSS., which, for thirty years, had lain buried in the possession of M. Savigny,^a he could only (as in the *Arachnoida*) give a sketch of the tribes and groups to which the insects described belonged; and these *Orthoptera* were in like manner included by him in the genus *Mantis*. I shall distinguish them here under the name of *Eremiaphila*.

When I was travelling in Egypt, in 1829 and 1830, under the guidance of Dr. Pariset, (the head of the medical commission appointed to make observations on the plague) an excursion to the Oasis of Bahryeh^b was deemed advisable by him, partly for the analysis of the thermal waters it contains, and partly for other medical investigations connected with his mission. Drs. Lagasquie and Darcet were charged with the chemical and medical observations, and Dr. Pariset allowed me to avail myself of this invaluable opportunity of investigating the natural history of this isle of the desert, which is yet hardly known to us in a physiological point of view.

We left the last traces of vegetation on the 27th of February, to commit ourselves to these burning wastes; and I beheld one by one disappear, even the last vestige of animal life, with the plants which might support it. After a day and a half's journey, what was my surprise, when amongst the debris of shells, of which I collected some magnificent specimens, (now in the Museum,) amongst the nummulites which our dromedaries

^a See Note I. at the end of this article.

^b See Note II.

crushed beneath their feet, and amongst which I sought, with little hope, for insects; what, I say, was my astonishment to see slowly crawling a small species of *Mantis*, with a squat, thick-set body, apterous, or nearly so, and seeming to reconnoitre the smallest holes in the ground in search of prey!

I left our caravan, and remained with my servant Hralil, a young Arab, who had already collected insects for me with much attention. We stayed to observe this singular creature, whose presence in such a place had excited my wonder to the utmost. But vainly, for a length of time, did we follow his every motion; not a fact could I learn of his manners, habitat, or means of existence. Already two hours had been passed in these fruitless observations, and my companions had disappeared in the distance, amid the magic waters of the mirage. To have prolonged our stay in these solitudes would have been imprudent: I bid adieu to the *Mantis*, and rejoined our party. Similar insects were repeatedly seen, and I examined them in like manner, but without ascertaining one point I wished to know. The morrow brought the same adventures—the same observations fruitlessly prolonged for hours, and with as unsatisfactory results.

But what struck me most forcibly was the change of colour I observed in these insects^c according to the soil on which I found them, the tint of which they assumed in the most perfect manner; so much so, that it was only by their motions that I could distinguish them on this soil so destitute of life. No doubt from this cause numbers escaped me, worn out and overcome as I was by the vertical rays of an African sun.

The nimble *Ædicnemus*, almost the only bird which ventures amidst these desert regions, and a small Saurian, the *Trapelus Ægyptiacus*, true Arab of these sandy wastes, and which I found occasionally with my *Eremiaphilæ*, presented that perfect resemblance to the colour of the ground which I had heard described, but which I never believed could have existed in so great a degree. This identity of tint was so striking that in a spot where the soil was *brown*, insects and reptiles assumed the same colour; and if, at the distance of one hundred paces, I strolled over the debris of shells, or on a calcareous surface, whose whiteness was dazzling, there these

^c See Note III.

same creatures had assumed that silvery tint which rendered them undistinguishable from the asperities of the ground.

Do they then live in these limited spheres without wandering? Can they, at pleasure, assume the colour of the soil on which they may happen for a time to sojourn? The physical cause seems incapable of explanation.

We well know that in the Polar regions several *Mammiferæ*, as well as birds, can (but only for a time) assume the white colour of the snow; but I do not think this chameleon faculty has ever been observed among the *Invertebrata*.

As for the intention of Nature in this case, must it not have been to afford the *Eremiophilæ* more facility to escape the attacks of their enemies (since they are placed in a dangerous position, being the only insects which in these regions can serve as a prey) that she has identified these *Orthoptera* with the colour of the soil so completely that it is totally impossible to see them except when in motion.

In spite of all my care, and all my investigations, I could not find a single other insect in the habitats of the *Eremiophilæ*. Some, indeed, were to be seen in approaching the Oases, but only in their immediate vicinity, and these were the genera *Anthia*, *Graphipterus*, *Scolia*, *Pimelia*, *Acrida*, *Mantis*, (proper,) *Formica*, the universal *Vanessa cardui*, the *Danaides*, &c., but when we came in sight of these the *Eremiophilæ* had long disappeared!

This strange fact, which I had an opportunity of confirming on my return from Bahryeh, by another route across the desert, continued to puzzle my brains as much as before.

What indeed can be the food of these *Orthoptera* amidst such frightful wastes, where no other herbivorous insect can by possibility exist; for there is not a plant, not a vestige of vegetation; and where I met with them I never found even the glasswort and colocynth,—sad and scanty traces of vegetable life, but on which the eye dwells with pleasure,^d and which are generally seen in parts more proximate to habitable land.

These *Eremiophilæ*, too, are armed with predatory claws, strongly toothed, and are covered with elytra, hard and solid in comparison with those of the other *Mantides*; every thing about them announces habits essentially carnivorous—a life alone de-

^d See Note IV.

pendent on rapine and plunder. Where then are the insects so strong as to require such arms for their capture, when, during a week I spent in the desert itself, (out of a month which our excursion lasted,) not one of us could find other insects at the same time as the *Eremiaphilæ*?

Not only to myself, but to my companions, who took every pains for me, and to the Arabs whom I employed, especially in zoological research, all investigation proved vain. Unquestionably, if other insects had existed, the Bedouins of our escort, whom the promise of a reward, worthy of their utmost ambition, (good European powder,) kept constantly on the watch, would not have allowed them to escape; for we could well trust their eyes, shaded by long lashes, and practised to discover the smallest particle of wheat, powder, or dourrah, which chance throws before them. I am therefore almost tempted to believe that in the places where I found the *Eremiaphilæ* no other insects could have existed.

On the other hand, the elytra, half petiolated, small and patelliform in their greatest development, in these *Orthoptera*, and the wings equally unadapted to flight, forbid the idea that, like the *Acridiens*, they can make distant excursions, reach the cultivated lands, there feed, and then return to the deserts. It is equally impossible to believe that their claws, useless for leaping, should be sufficiently powerful locomotives to transport them to such distances. Besides their quiet, solitary habits, and apparent want of the disposition to wander, render such excursions improbable. It is true that the wind, as at sea, blows constantly, and in every direction, over these burning tracts, rolling the sands like waves to a distance; but as I have never found these insects except in the desert, and as they disappeared when I approached vegetation, every thing tends to the belief that it is not the ordinary hurricanes of these districts which transport them by accident, but that the desert is their dwelling-place, and that they never leave it.

In spite of the extreme facility with which certain insects support a long abstinence, we can hardly imagine that the *Eremiaphilæ* have no other nourishment than what the wind may carry into the desert from the cultivated lands. This precarious existence, of which the spiders, ant-lions, &c. may serve as an example, cannot be reasonably admitted here as a law of nature; neither can I suppose that she has destined

the *Orthoptera* always to devour one another, as has sometimes been accidentally observed among the *Mantides*. This question remains, therefore, to me insoluble, and this express condition of living in the most uninhabited and most uninhabitable places is, to me at least, incapable of explanation. But if the habitat of these insects attracted my attention in some particulars, the organic conformation of one of them was not less able to fix it most intently.

Up to the present time, all authors have agreed in recognising five articulations in all the tarsi of the *Mantides*; and yet one of the individuals which I found among them exhibited four only on the anterior, and three on the intermediate and posterior legs!

Although they were in the pupa state, it is not to be supposed that the development of the other articulations takes place at the time when these insects arrive at perfection, since the larvæ of species allied to them, as in all the other known *Mantides*, have five articulations in all their tarsi. I could not, with the most powerful microscope, detect even the rudiments of the missing joint, which might have been attached to the adjacent part, as is observed in some insects.

With respect to this anomalous and puzzling conformation, I should have been tempted to consider it as one of those whimsical freaks of nature which sometimes occur, had it not been for certain characters peculiar to this insect, and which I shall point out in referring to this species, which afforded a most marked difference between it and the other *Eremiaphilæ*; in short, if in the work on the Expedition to Egypt—(Pl. 2, fig. 5,) I did not find this very insect accurately figured, and (fig. 6. d,) this same anomaly faithfully portrayed. It is not probable that, after a lapse of thirty-four years, the same monstrosity should have reappeared. Laying aside this supposition, which cannot reasonably be admitted, it must be allowed that this species has in fact but four and three articulations of the tarsi, and that there may be other species of *Mantis* of a similar conformation.

Reflecting upon the recent observations on the number of the articulations of the tarsi in *Coleoptera*, and their disputed importance in classification, it must be remarked that in this anomaly of the tarsal joints nature has only followed the line she has pointed out in the heteromerous *Coleoptera*, where the

number of articulations in the tarsi is always more numerous in the anterior than in the posterior legs. The genus *Heterotarsus*, as well as showing one articulation less than the *Heteromera* possess, also gives an additional proof of the regularity in the relative number, which seems invariable, since it affords four articulations of the anterior and three of the posterior tarsi.

Here is a system of arrangement entirely overthrown by this insect, and a fresh blow given to the tarsal classification, already enough shaken by the observations recently published in the *Recueil des Annales de la Société*.

This insect then demands the institution of a new division, as we shall hereafter see.

I have in my possession the *Eremiaphila* in question, in the pupa state, whilst in the work on the Expedition to Egypt it is only figured in the larva state; therefore I am able to judge with more certainty respecting the distinctive character of this truly curious creature, and which, in whatever state we find it, is perfectly identical. But as I have before asked, may we suppose that at the same time that the elytra and wings are developed, the tarsi might assume the additional number of joints which the allied species exhibit in a perfect state?—Nothing proves this.

Though it is unadvisable, I well know, to create a genus from an insect not in the perfect state, I feel persuaded, from all the precedents we have relative to the transformations of this family of *Orthoptera*, that this species will preserve the same constancy in the conformation of the tarsi, the same difference in their claws, and the same peculiar form in the subanal plate of the female, &c. I think I may therefore make it the type of a genus, which I shall describe by the name of *Heteronutarsus*.

Fully impressed with the excellent principles laid down by M. Germar in his *Conspectus Cicadarium*, on the too great facility with which many modern entomologists have created new genera, I have long hesitated to institute this for fear of falling under the same lash, and I have only yielded to the opinion of persons whose advice has such weight with me that I could not do otherwise than obey.

NOTES.

NOTE I.

MAY I take advantage of this opportunity of observing how desirable it would be that government should require from M. Savigny the return of those valuable insects and manuscripts, which have for so many years remained useless in the possession of that entomologist, whose miserable state of health, unhappily, precludes him from rendering any further service to that science which he has adorned by his labours?

It would be offering no offence whatever to a professor whose sight is so far gone as to incapacitate him from any exertion, to entrust to another the conclusion of so valuable and splendid a work, and which has, in its progress, cost such immense sums. Daily do we see strangers publish and describe as new numberless species which have, for thirty years, been described in that work. The *Sybolæ Physicæ*, published at Berlin, affords us a sufficiently striking instance of it.

It would be to the credit of the Entomological Society of France to take the first steps in this matter, and to require of government the completion of the entomological part of that monument of science of which our misfortunes in Egypt have not been able to deprive us, but from which we see daily one of the laurel wreaths the scientific world adjudged it torn away.

The Society, in undertaking the completion of this work, would worthily act up to the object of its institution—the propagation and advancement of entomology.

NOTE II.

El Ouâh el Bahryeh, the most northerly of the four Oases which, on the left of the hill, stretch from the heights of Faioum to those of Assouan, a distance of nearly one hundred leagues. It is about four days' march from the Nile, and covers almost two leagues in extent. With respect to the three others,

Farafrea, Daket, and Khardjeh, it ranks third in importance, for by its different productions, and especially dates, it brings in at least 200,000 francs per annum to Hassan Bey, governor of Upper Egypt, who now holds it, and who reduced it, fifteen or sixteen years ago, to the yoke of the pacha, by exterminating the robbers whose resort it was.

It consists of four principal villages, which, together, contain about 2000 souls: viz. Zabou and Mendisch on one side, and Qasi and Baoneit on the other, separated by a ravine and a high promontory of granitic, silicious, and basaltic formation. Under the thick forest of dates which shadows them, may be found some of our European plants, intermixed with those peculiar to Africa,—there may be seen the peach, the apricot, the almond, the olive, the vine, the Indian fig, and some of our esculent vegetables.

The thermal waters, warm and ferruginous, (one only is cold and sulphurous,) rising often to 33° Reaumur, flow every where over the native soil, and unite to form the frequent morasses, where you may see in profusion the *Mollusca*, the splendid *Ampullaria carinata*, and, in insects, the pretty *Gyrinus Æneus*, &c.

This oasis, like another small one (the Oasis of Hanab, which is uninhabited,) contiguous to it, is protected on the west by immense hills of sand raised by the west wind, which is most prevalent there, and renders the place more healthy.

It affords few cultivated spots of great extent, and, except the fields of barley, lupins, and rice, it consists only of an infinite number of small gardens, enclosed by hedges through which it is difficult to pass.

The greater part of our birds of passage, both land and water, are to be found there: the dangerous *Cerastes*, the *Scincus officinalis*, *Sphænops Capistrata*, and other reptiles, abound. Of insects, some of our species will be seen on the wing, in company with those essentially Egyptian. Thus, in *Lepidoptera*, you will observe *Pieris Brassicæ* and *Daphidice*, mingling with *Danaïs Chrysippus*, *Argus Lysimon*, *Theophrastes*, &c.; however, the nocturnal ones offer more species exclusively African. In *Coleoptera*, *Graphipterus variegatus*, *Anthia Marginata*, and numbers of *Pimeleæ* and *Erodites*, inhabit the sand-hills, whilst *Cleonus Clathratus*, *Brachycerus Africanus*, &c. are frequent in the cultivated grounds, with

several species peculiar to Senegal. Of *Orthoptera*, the beautiful *Truxalis grandis* of Kley, the *Blepharis mendica*, &c. are in motion, with multitudes of *Acridiens*. *Hymenoptera* are no less abundant; the *Pompili* and the *Xylocopæ* are buzzing about in thousands. Quantities of the handsome *Scolicæ*, among others the pretty *Eriophora* of Klug, and *Vestita*, were plentiful when I was there; and in this numerous order, as in all the others, I met with the major part of the species figured in the work on Egypt, and in the *Symbolæ Physicæ* of Klug and Ehrenberg. The abundance of water attracts crowds of *Neuroptera* and *Diptera*, amongst which I met with some new and beautiful species.

The *Tipulæ* were in such numbers that their swarms render a residence in this oasis most cruel to an European newly arrived. But it is only for a time; for I remarked here, as in Sicily, when at Augusta, in the vicinity of the pestilential marshes of Lentini, that toll once taken by these little vampires, they leave you at last easy enough; but nothing can equal the sanguinary pertinacity with which they fall upon the new comer, the purgatory they make him endure, and from which he in vain attempts to escape. Fire only, instead of attracting them, drives them from the tents.

In other respects, this oasis (undoubtedly the Oasis Minor of the Romans, for a triumphal arch, coins, &c. seem to prove it,) is a sweet and tranquil residence, as much from the absence of wild beasts as from the peaceable character of its inhabitants, and their easy means of subsistence, notwithstanding the small number of cattle which they possess. Any one who could reside there some time would assuredly, at least in entomology, make a most valuable and abundant collection, and which would have a much greater interest if he should extend his excursions to the other oasis of the south.

NOTE III.

I can only speak of the Pupa; and I do not know if the perfect insect is susceptible of the same changes. What I say here upon the colour and means of living of these insects I do not mean to apply to other *Eremiaphilæ* which have been sent me, as I am totally ignorant of the circumstances under which they have been found.

NOTE IV.

We must, however, believe that these insects do not exclusively inhabit those places where vegetation is impossible. Those species which occur in Syria and Lebanon, where there exist vast tracts dry but not barren, and where other insects are also found, prove the contrary; but I think we may, without fear of mistake, believe that the *Eremiaphilæ* inhabit dry places in preference to those which are cultivated.

I. F. C.

ART. VI. *A List of Coleoptera taken in the County of Sutherland, in June 1834.* By Mr. J. WILSON.

Cicindela campestris	Curtonotus aulicus
Cychrus rostratus	Bradytus apricarius
Carabus Catenulatus	Amara eurynota
Glabratus	familiaris
Clathratus	communis
Violaceus	similata
Cancellatus	vulgaris
Arvensis	Olistrophus rotundatus
Helobia brevicollis	Calathus cisteloides
Gyllenhalii	melanocephalus
Leistus rufescens	mollis
Lamprias chlorocephalus	piceus
Tarus basalis	Agonum viduum
Clivina fossor	parum-punctatum
Dischirius gibbus	mæstum. <i>Var.</i>
Brosicus cephalotes	Anchomenus prasinus
Feronia nigrita	Albipes
Orinomum	Loricera pilicornis
nigra	Badister bipustulatus
Melanaria	Trechus minutus
Abax Striola	Blemus paludosus
Pæcillus cupreus	Peryphus littoralis
Argutor erythropus	Notiophilus biguttatus
pullus	aquaticus
Patrobus rufipes	Elaphrus cupreus
Harpalus æneus	Blethisa multipunctata
limbatus	Dytiscus marginalis
ruficornis	Hydroporus trivialis

<i>Colymbetes bipustulatus</i>	<i>Hypnoidus riparius</i>
<i>uliginosus</i>	<i>Elater obscurus</i>
<i>agilis</i>	<i>marginatus</i>
<i>Gyrinus natator</i>	<i>Campylus linearis</i>
<i>marinus</i>	<i>Atopa cervina</i>
<i>Elmis cupreus</i>	<i>Malthinus biguttatus</i>
<i>Helophorus aquaticus</i>	<i>Telephorus rusticus</i>
<i>griseus</i>	<i>dispar</i>
<i>granularis</i>	<i>bicolor</i>
<i>Hydrobius fuscipes</i>	<i>nigricans</i>
<i>melanocephalus</i>	<i>testaceus</i>
<i>orbicularis</i>	<i>pallidus</i>
<i>Sphæridium 4-maculatum</i>	<i>Anthobium castaneum</i>
<i>Necrophorus Vespillo</i>	<i>Hylobius abietis</i>
<i>Oiceoptoma sinuata</i>	<i>Sitona lineata</i>
<i>rugosa</i>	<i>Hypera arator</i>
<i>thoracica</i>	<i>Barynotus mercurialis</i>
<i>Silpha obscura, var. ?</i>	<i>obscurus</i>
<i>Phosphuga atrata</i>	<i>Strophosomus coryli</i>
<i>Meligethes viridescens</i>	<i>Phyllobius argentatus</i>
<i>Byrrhus pilula</i>	<i>parvulus</i>
<i>fasciatus</i>	<i>uniformis</i>
<i>æneus</i>	<i>mali</i>
<i>varius</i>	<i>mali, var. ?</i>
<i>Hister carbonarius</i>	<i>Thalacites geminatus</i>
<i>Geotrupes stercorarius</i>	<i>Sciaphilus muricatus</i>
<i>sylvaticus</i>	<i>Otiorhynchus tenebricosus</i>
<i>lævis</i>	<i>lævigatus</i>
<i>vernalis</i>	<i>atro-apterus</i>
<i>Onthophilus striatus</i>	<i>Rhagium bifasciatum</i>
<i>Aphodius fossor</i>	<i>Donacia sericea</i>
<i>rufipes</i>	<i>simplex</i>
<i>terrestris</i>	<i>cincta</i>
<i>fimetarius</i>	<i>Galeruca tanacetii</i>
<i>Phyllopertha horticola</i>	<i>capreæ</i>
<i>Serica brunnea</i>	<i>Luperus fulvipes</i>
<i>Trichius fasciatus</i>	<i>Phædon vitellinæ</i>
<i>Cataphagus pectinicornis</i>	<i>raphani</i>
<i>tessellatus</i>	<i>Chrysomela fastuosa</i>
<i>cupreus</i>	<i>staphylea</i>
<i>Anathrotus ruficaudis</i>	<i>Coccinella, 30-punctata</i>
<i>niger</i>	<i>Helops caraboides</i>
<i>Selatosomus æneus</i>	<i>Aleochara concolor</i>
<i>minutus</i>	<i>Tachyporus chrysomelinus</i>

Tachinus marginellus	Quedius tristis
rufipes	picipennis
Creophilus maxillosus	Philonthus politus
Staphylinus murinus	splendens
castanopterus	varians
stercorarius	Othius fulgidus
æneocephalus	Gyrophypnus longiceps
Georius olens	linearis
Ocypus similis	Lathrobium lineare

Carabus hortensis was rare; *C. glabratus* and *clathratus* were frequent, and *C. catenulatus* extremely abundant.

Trichius fasciatus.—Of this insect a single specimen only was taken.

Otiorynchus lævigatus was taken on Ben-na-mac-dhui, at an elevation of 4300 feet.

Corcinella 30-punctata.—Three specimens of this insect were taken in Cromarty, between Invergorden and Tain: it is remarkable that not one other species of the genus was seen in Sutherland.

ART. VII.—*Entomological Notes.* By W. E. SHUCKARD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

DEAR SIR,—It may be interesting to your readers to know the localities of one or two good insects, which have been captured this year by friends of mine; but I must note as one of the greatest rarities a remarkable case of hermaphroditism in the apidæ, in an *Anthophora retusa*, (Lin.,) the description of which is as follows.

Right half of the head and of the thorax, female; antennæ and legs on the right side, female; abdomen entirely female; but the whole of the thorax *above* is female; what is not described as female is of the other sex.

This insect presents a very remarkable appearance; its face being half coloured with white and black, and the difference of its legs and antennæ being so marked; but it is needless to point out that such is the case, as it will necessarily suggest

itself to every one who is acquainted with the vast discrepancy of the sexes in this species. It is also remarkable from giving a positive contradiction to theory, which makes the right side the nobler; and adduces in evidence that in all cases of hermaphroditism amongst insects the right side is male. In my humble opinion, Sir, the collecting of facts is more valuable than the constructing of crude theories; for the latter too much resembles building upon sand, which the first tide washes away, and in as far as one word of truth is worth a million of falsehoods. Instances of hermaphroditism amongst the *Hymenoptera* are rare. I possess a *Cimbex Griffinii*, in which the left anterior leg only is female; and a specimen of *Andrena fulvescens*, (Kirby, MSS.) in which the sexes are intimately intermingled. The antenna on the right side is female, on the left male, but although having thirteen joints, not longer than that of the female. The nose is only coloured in streaks; [in the male the entire clypeus is of a milky colour;] the abdomen is female, having only six segments; the podex is precisely as in the females, whereas there are seven ventral plates; and in the legs the male conformation predominates, although also (there) there is a struggle between the sexes for precedence.

The instances of the occurrence of rare insects are that of *Hylecætus dermestoides*, (Fab.), which is marked as foreign in Stephens's nomenclature, but of which Mr. T. Desvignes took seven specimens in Sherwood Forest on the 1st of May, one of which, through his kindness, I possess. Of these, six were male, and only one female. He also took the *Elatér rufipennis*, (Hoffmans,) in some numbers; and my friend Mr. F. Smith has received a specimen of *Carabus intricatus*, (Lin.) included amongst many specimens of *Carabus catenulatus*, (Fab.) collected upon Horsley Downs, by a country friend of his. I should have observed, that the specimen above described, of the hermaphrodite *Anthrophora retusa*, was captured at Barnes, by Mr. F. Smith.

If these notices are worth your acceptance they are wholly at your service. Yours very truly,

31, Robert Street, King's Road, Chelsea,
June 23, 1836.

W. E. SHUCKARD.

ART. VIII.—*List of Entomological Works.*

1. *British Entomology*; by John Curtis. Nos. 147—150, March to June, 1836.

2. *Illustrations of British Entomology*; by J. F. Stephens. Nos. 80—82. December 1835, to April 1836.

3. *Coléoptères de Mexique*; par A. Chevrolat. Fascicule 7. Strasbourg, 1835.

4. *Monographie des Cétœines, et Genres voisins, &c.*; par M. H. Gory, et M. A. Percheron. Livraisons 11—13. Paris, 1836.

5. *Iconographie du Règne Animal de M. le Baron Cuvier*; par M. F. E. Guérin. Livraisons 42, 43. Paris.

6. *Magasin de Zoologie*; par F. E. Guérin. Paris.

7. *Iconographie, &c. des Coléoptères d'Europe*; par M. le Comte Dejean, et M. le Docteur J. A. Boisduval.

8. *Annales de la Société Entomologique de France. Tome IV. Trimestre 4.* Paris, 1835.

9. *Genera et Species Curculionidum, cum Synonymia hujus familiæ*; a C. J. Schænherr, &c.

10. *Die Wanzenartigen Insecten. Getreu nach der Natur abgebildet und beschrieben von D. Carl. Wilh. Hahn.*; Dritter Band, Zweites Heft. Drittes Heft. (Forsetzung des Hahn'schen Werks.) Von Dr. G. A. W. Herrich-Schäffer. Nürnberg, 1836.

11. *Die-Arachniden. Getreu nach der Natur abgebildet und beschrieben (Forsetzung des Hahn'schen Werkes)*; von C. L. Roch. Dritter Band, Erstes Heft, Zweites Heft. Nürnberg, 1836.

12. *Iconographie des Chenilles, &c.*; par M. Duponchel.

13. *Transactions of the Zoological Society of London. Vol. I. Part IV. 1835. Character and Description of a new Genus of the Family Melolonthidæ; by John Curtis, Esq. F. L. S. &c. On a Species of Moth found inhabiting the Galls of a Plant, near to Monte Video; by John Curtis, Esq. F. L. S. &c.*

14. *The Magazine of Natural History; conducted by J. C. Loudon. London: Longman. 1836. Nos. 60—62. 1. Illustrations of British Zoology; by George Johnston, M.D. &c. 2. Notes on the Habits of the Chegoe of Guiana (Pulex penetrans), and Instances of its Effects on Man and Dogs; by Charles Waterton, Esq. 3. An Account of the Pulex penetrans L., translated from Pohl and Rollar's Work on the Noxious Insects of Brazil; by W. E. Shuckard, Esq.; &c. &c.*

15. *Outlines of Comparative Anatomy; by Robert E. Grant, M.D. &c. Part III. containing Nervous System, Organs of the Senses, and Digestive Organs. With twenty-three Wood-cuts. London, 1836.*

16. *The London and Edinburgh Philosophical Magazine and Journal of Science. Third Series. Vol. VIII. No. 49, June 1836. Characters of some undescribed Species of Araneidæ; by John Blackwall, Esq. F.L.S.*

17. *Index Entomologicus; by W. Wood, F.R.S. No. XIII. containing the Tortricites.*

ART. IX.—Varieties.

Sight and Smell of Insects.—The sense of smell is unquestionably a material guide to insects in the discovery of their food: but as we are aware of the fact of the bee possessing five eyes, and others of this class having as many, and in some cases more, I think that to such as these we may with greater propriety ascribe acuter powers of vision than of smell, and especially when we consider that hitherto no naturalist has

detected the seat of smell in insects. I have often observed that when an insect discovers a flower by its sight, it does not assure itself of its reality, or of its containing honey, by using its sense of smell; for if it did so it would not waste its time in vainly searching for food in the honeyless nectaries. Bees may be frequently seen to alight upon flowers which have been completely deprived of their honey by bees that had previously visited them,—instances which show that they are led thither by their vision, for if smell were then their guide they would not be deceived. Some time since a tortoise-shell butterfly entered my room, and flew in a direct line to some artificial flowers placed under glass covers, about the smooth slippery sides of which it fluttered, spoiling its wings in vain attempts to gain its object. I once saw, at Paddington, a bee's attention for a long time engaged by the sight of some flowers painted upon a china-dish, and against which it flew, appearing much balked to find them hard and honeyless. Now, if these insects have such an acute sense of smell as some writers ascribe to them, how comes it that it allows their vision to mislead them?

JAMES FENNELL.

Nov. 12, 1835. 4, Chester Terrace, Borough Road, Southwark.

2. *A Query*.—Kirby and Spence, in their "Introduction to Entomology," mention some insect,* the name of which I forget, which, they say, was the means of saving the life of Latreille. By explaining their allusion you will oblige myself and others.

JAMES FENNELL.

Southwark, Nov. 12, 1835.

3. *Vanessa C. album*.—This butterfly has been exceedingly abundant at Worcester and Malvern this autumn; it settles on the apples which have fallen in the orchards, and appears to feed on their juices; the larva feeds on the leaves of the hop. (*Communicated to E. Newman by*)

Worcester, Nov. 16, 1835.

SAM. ALEX. BURLINGHAM.

4. *Colias Hyale and Electra*.—About sixty specimens of *Hyale* have been taken this year in the neighbourhood of this

* *Necrobia ruficollis*. Latreille only informs us (Gen. Crust. et Insect. l. 275,) that it secured his life and liberty by the assistance of his friends Dargelas and Bory de St. Vincent.—ED.

town, flying over lucern fields on sunny days in August. *Electra* has been taken at Henfield. A number of *Deilephila Galii* have been bred here this summer from larvæ.

Brighton. 1835.

J. G. B.

5. Characters of two undescribed British Coleoptera.—

ABDERA, Stephens.

Abdera picea. *Picea*, Abifasciata et quadrifasciata angustior, antennis basi, pedibus thoracisque margina fulvis.

Picea, nitens, subtilissime punctata, fere glabra: oculi nigro-picei: thorax fulvus; discus piceus: antennæ fuscæ, basi fulvæ: pedes fulvi. (Corp. long. lin. $1\frac{2}{3}$.)

Found near London.

ORCHESIA, Latreille.

Orchesia minor. *O. micante multo minor, antennæ graciliores, pedes obscuriores, thoracis foveæ optime determinatæ.*

O. micantis forma et colore, fusco-picea, sericeo-pubescent; subtilissime punctatus: caput, thorax, pectus, abdomen et pedes picea: palpi ferruginei: antennæ graciles, subclavatæ, obscure piceæ, basi et subtus ferrugineæ. (Corp. long. lin. $1\frac{1}{2}$.)

Found at New Lanark, Scotland. In the cabinet of the Entomological Club.

F. WALKER.

6. *A Species of Coccinella new to Britain. C. M.-nigrum of Fabricius.*—The entire upper surface testaceous, occasionally varying, probably in immature specimens, to a dirty white; the eyes and divers spots on the head varying in different specimens, nearly black: prothorax, dirty white, with an undulated black line in the form of a W, the component parts of the W sometimes wanting connexion: elytra testaceous, the hue exceedingly variable in different specimens; each has on the disc a dark longitudinal line, frequently interrupted in the middle; this line in many specimens is totally wanting. The under surface is dark brown, anteriorly approaching to black: the legs are entirely pale. The size is precisely that of *C. variabilis*, but the form more oblong.

Beaten in some abundance from the larch on Lady Rodney's

estate at Berrington, in Herefordshire, during the second week in May, 1836. Eighteen specimens, of which no two are precisely similar, are preserved in the cabinet of the Entomological Club.

E. NEWMAN.

7. *Two perfect Specimens of the Emperor Moth produced from one Caterpillar.*—Mr. Marshall, at page 511 of the last volume, is somewhat severe on the editor of the Fire-fly, for not expressing his doubt or disbelief of the statement made by Mr. Edmonds of Worcester, touching the production of two moths from one caterpillar. Without expressing a decided opinion on the subject, we should like to call Mr. Marshall's attention to the fact, that the same assertion had been previously made by at least half a dozen different authors of respectability, among whom we may mention Kirby and Spence. Mr. Dale, in the Magazine of Natural History, asserts that he reared *Arctia Menthrasti*, and six of *Ophion Vinulæ*, from a pupa of *Cerura Vinula*. This is far more extraordinary; for supposing the six Ophions to be the natural parasites of the *Cerura* caterpillar, then from whence came *Arctia Menthrasti*? Was that insect really produced from a portion of the caterpillar of the puss moth? We believe neither the editor of the Magazine of Natural History, nor any of his correspondents, ever expressed a doubt of this "curious fact," as Mr. Dale very appropriately calls it. Another correspondent of Mr. Loudon's excellent and scientific periodical roundly asserts, that the "tail of the caterpillar becomes the head of the butterfly: this is as remarkable as if it stood thus: "the great toe of the boy becomes the nose of the man." We still would not dispute the question; we should only conclude that our researches into insect anatomy had been too shallow to develop the fact, which this insect anatomist had by almost superhuman skill and elaborate investigation discovered. The real name of this extraordinary genius, we believe, has not yet transpired; nor do we hear that he is at present publishing his researches: we venture to predict, that when they are fully received by entomologists, the works of Straus-Durckheim, Herold, Lyonnet, Dufour, and Audouin, will become waste paper.

EDITOR.

THE
ENTOMOLOGICAL MAGAZINE.

OCTOBER, 1836.

ART. X.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 37.)

CHAPTER V.

[Llanthony. Black Mountain.]

THAT evening sounds of revelry were heard within the walls of Llanthony. There was the jovial landlord with his fiddle, on which instrument, by the way, he excelled. There was his spouse, fair, fat, and forty, or perhaps a trifle more. There was Theophila, a graceful being, that seemed to have dropped amongst them from the clouds. There was a minor female help, altogether Welsh, with long hair, that appeared totally unkempt. There was a gamekeeper and grouse preserver,—a man of the mountain,—who was at first half suspicious of our appearance, for the which I cannot much blame him, for I never saw three honest travellers equipped in more poacher-like apparel, although the artist has contrived to make us look wondrously genteel in the tail-piece of the foregoing chapter. After a while the way to this man's heart was discovered, and he was jovial, and his songs were loud and tuneful. There were two others under this man's authority, and one male help, an *attaché* of the establishment. There were, moreover, the grouse-shooter, the cynophobist, and the insect-hunter; in all, eleven souls. But the human beings were not the only inhabitants of Llanthony; there were six fox-dogs, the finest creatures imaginable, long-legged, wiry-haired,

fawn-coloured, slim-tailed, bright-eyed, half-reasoning brutes, that Edwin Landseer would have been proud to paint; and there were three thorough-bred pointers, that Cooper (entomological Cooper) would have gloried in; besides sundry cats, which, like ghosts, wandered about unnoticed by the dogs. The poor cynophobist, from the praiseworthy desire to be social, dovetailed an occasional half-score words into the conversation, or delivered himself of an apology for a laugh, whenever the landlord was unusually facetious; but he was evidently in purgatory, and trembled for my safety, in addition to his own, when he beheld a fox-dog resting his wiry nose in my lap, while another, with sparkling eyes, his forefeet on my knees, was asking for every mouthful that I ate.

It was late ere we retired; and then the winding staircase lighted by loop-holes, the quaint bed-rooms, the deep-latticed gothic windows in the massive walls, had so many charms and attractions, and the moon continued to shine for hours so very brightly, that the Insect-Hunter slept not till morning was far advanced; and when at last sleep did come, he was employed in swinging censers, kneeling to crucifixes, confessing sinners, or regaling his palate with the most exquisite grayling, and quaffing the delicious wines of Germany in the cool and well-appointed cellars of Llanthony. Oh may Llanthony never become common! may it never, like the banks of Niagara, re-echo the cries—"good cigars, ginger pop, and soda water!"

'Twas morning,—all was stir and bustle, the incessant bleating of mountain sheep, brought to be washed in the river, and crying to their lambs, now unable to recognise their mothers in their cleanliness, was unutterably wearisome: then the bay of the fox-dogs, the cheering of the huntsman, and the occasional blast of his horn, called forth the echoes of every mountain, which, reverberating from side to side, seemed as though they never would be still. Alas, what labour after consistency have those to undergo whose writings are the result of imagination! Which of them all would dare to couple the Midsummer sheep-shearing and the hunting of foxes? yet these are coetaneous at Llanthony. Foxes at Llanthony are "animals of so base a nature that the law will not protect them at any season:" they are hunted to the death; the object, though never to be accomplished, is their extermination. The dogs used in the chace are of prodigious speed—they almost

equal greyhounds; and, in a few hundred yards, will run down any fox, if they have a fair start. The foxes burrow in the almost perpendicular cliffs of the mountains, which are often completely honied-combed with their holes; when they reach these the hunt is over, and the fox secure.

It is difficult to take leave of Llanthony, but my readers are tired, and I will "move on." The wanderers are again a-foot; they turn their faces northward, and pursue the course of the Honddu, the beautiful rivulet that used in the olden time to furnish grayling to the gastrological monks. The Honddu is a little fretful mountain stream; its voice was ever in our ears; it was the companion of our way for seven miles: sometimes its channel was big enough for a mighty river; its rocky banks, many hundred yards apart, and rising fifty feet on either side, covered with versicolorous lichens, and in the crevices affording a lodgment to graceful and most luxuriant ferns. Nothing could exceed the beauty of some spots, where the cold lichen-stained rocks bore at every ledge where a handful of soil would rest, a bunch of feathery fern, which was incessantly in motion, and on their summit a crest of delicate and graceful birch. Generally, however, the banks of the Honddu slope gradually to the stream; they are often cultivated for the distance of a full mile on either side, and appear to produce excellent grass; it was now ready to cut, and every field was enamelled with flowers. It would be impossible in such a walk as this for the Insect-Hunter not to meet with success; box after box was filled till it would hold no more; and then proceeding at a better pace, the travellers at last emerged from the ravine, where the stream is no longer capable of yielding its tribute to man, and was therefore untouched by his hands, and trickled over the barren and rugged side of the mountain: there they sat down and drank of its crystal waters, and rested awhile from their labours. Then they turned northward through the Bwlch-y-fingel, and wandered on under the heights of Cusop, till they found a hospitable home at Llydyadyway, the residence of the brother of the grouse-shooter.

CHAPTER VI.

[Walks in Wales.]

It has always seemed to the Insect-Hunter something like a drawback to the full enjoyment of a lofty Welsh view, that it so frequently wants the horizon. Mountain follows mountain, more and more distant in every direction, and more and more indistinct, till those in the extreme distance are not to be distinguished from the exhalations with which the air seems ever to be loaded. I speak now of bright sunny days. When the weather is overcast, of course you see no mountains: in cloudy weather one may stay at Capel Curig, at the very foot of Snowdon, for a month, without once seeing its triple head. This fact of the haziness of the air does not so much affect views from lower situations, where hill rises over hill, until some giant mountain shuts out the distance; and it is on this account that these less extensive views are often so much more satisfying.

Passing through the town of Hay, on the Brecon road, the Black Mountain presents a noble spectacle to the right; the variety of its profile seems endless, as it stretches out its promontories into the more level country; but as you advance, your attention becomes fixed on the majestic Beacon, which now occupies all the horizon before you. There is a grand and mighty confusion in Snowdon, and its giant neighbours, Glyder Vawr, David, Llewellyn, and others, which contest the point with it as to superiority in height; but the Brecon Beacon has no compeers, its bifid head rises majestically above every thing around it, in placid and unquestioned pre-eminence. The height of the Beacon, I think, cannot have been correctly taken, as it is visible at so great a distance; I have seen it in clear weather, and traced its singular outline with accuracy at more than forty miles' distance, even from low ground.

A very remarkable character of Welsh, and, I suppose, all mountainous scenery, is its excessive liability to change. One cause is the frequent variation in the purity of the atmosphere: sometimes hills at less than two miles' distance terminate the view, and present their outline as the horizon; if the air is

less loaded with vapour, others appear in the background at five, ten, twenty, thirty, or even forty miles' distance, and in every instance those at the greatest distance present their own outline as that of the horizon. Another cause of the liability to change is the varied shadows cast by vapours, clouds, or even the mountains themselves, according to the position of the sun or moon; this second cause is so unceasing, that it is next to impossible to see the same view twice under the same circumstances, consequently all its colouring is changed. The colouring of distant scenery depends wholly on extraneous causes: the blackest fir plantations, or the brightest purple heaths, entirely lose their natural colours under peculiar circumstances; the fir may become purple, and the heather black. Snow, however, is an exception; it is almost invariably white.

Reader, whoever thou mayst be, that art about to visit Brecon for the first time, take my advice on three points: 1st. visit the Priory Walk before breakfast; 2d. take up thy quarters at the Castle; 3d. engage a bedroom that commands a view of the Beacon. The Priory Walk is pretty, even of an evening, when all the fashionables, male and female, of Brecon, are flirting there; and if there has been or is expected any commotion at Merthyr, or other great iron-works, a smart sprinkling of military is mixed with the natives, making the assemblage gayer still by an admixture of scarlet; but the Insect-Hunter is no adept in country coquetry, or country finery, nor is he a lover of red coats. He does not censure all this—he applauds it; if the enactors are gratified, that is enough; but give me, for my own particular enjoyment, the hour of morning, when the voice of nature reigns supreme, when the birds are offering up their morning hymn, and—

Reader, 'tis midnight! gaze with me from the windows of my bedroom on that glorious mountain. Talk not of continental wonders, of mountains which exceed the one before us five times in height; I tell you that excessive height makes them less beautiful, less intelligible. Observe those clouds slowly floating from the north-west, the edges of each illuminated by the radiant moon, sailing in spotless purity over the summit of the Beacon, but not illuminating any single object adown its hundred slopes: the mountain is one mass of

blackness. The clouds increase and multiply; faster and faster, they float onward, borne on the wings of the wind; soon the bright but evanescent beings will pass behind the mountain, and be lost to us. Ah, how is this? they pass not behind; but, one after another, they cut the dark outline of the mountain, and float in wondrous beauty between us and that magnificent mass. On, on they come, till the mountain's base is lost, and the mountain itself, as the bank of clouds climbs higher and higher up its side, looks like an island sinking in the sea.

For hours did I ponder on this beautiful sight, till the moon, getting farther to the north-west, lighted up some of the more prominent ridges, throwing the other parts into shadow still more deeply than before: every minute now gave fresh features to the scene; the clouds parted, and were scattered or hidden behind by the projection of the mountain; few of them were in sight when the Insect-Hunter retired to rest.

CHAPTER VII.

[The Brecon Beacon.]

The next morning was cloudy; there had been rain in the night, and the atmosphere was beautifully transparent; the immediate prospect was remarkably distinct, but there was no Beacon,—this great feature in the landscape appeared to have been shorn from the earth. The Insect-Hunter had determined to ascend the mountain, and therefore listened, with somewhat amused ears, to the repeated statements of the utter impossibility of doing so. The ascent is at all times dangerous; but when the mountain is enveloped in cloud, the danger is tenfold, because you may walk over a precipice without being at all aware that you are near one. We found no one who could give the least information as to the course we ought to take; no one to whom we spoke had ever ascended the mountain, or had the slightest intention of ever doing so. The Beacon is not like Snowdon, Malvern Hills, &c.—*fashionable*,—there are no donkies or ponies pressed into your service by their disinterested proprietors: there is but a solitary feeling on the subject—wonder at the excessive

folly of any one who undertakes so useless and perilous an adventure. By the by, it was once the custom among some of the young men of Brecon to make parties to perform the ascent of this mountain; it was something to be able to boast of the achievement; these were frequently attended with loss of life, and in the summer of 1833, when, I believe, the last adventure of the kind took place, two young men fell from the highest point over the precipice, and were dashed to pieces; their bodies were with great difficulty found, and were in the most horrible condition. I believe these youths had been wrestling, as a feat to talk of, on the very summit, and grappling each other too near the edge, one slipped, and both were precipitated headlong down the abyss.

The Insect-Hunter had so accurately noted the readiest ascent of the mountain during the long approach on the previous day, that it was made with the greatest facility, although we were constantly enveloped in a cloud, and therefore could make no observation on points previously observed. If you manage well, the last 200 yards is the only very steep part, as there are stone quarries three-quarters of the way up, the tracks to which afford the easiest ascent. The mountain is almost entirely covered with *carex* and coarse sour grasses, which afford a miserably scanty living to the ragged sheep, scattered every where, even to the summit, and the few still more ragged horses, which serve the Welsh drovers as locomotives. There is occasionally to be seen a scattering of the two usual species of *vaccinium*, and sometimes, but in no abundance, one or two species of heath. As we approached the summit, the clouds were evidently much lighter, and the sky above us was beautifully blue, the wind blowing pretty strongly from the north-west. The two heads are of nearly equal height, and apparently 600 yards asunder; but, though we occasionally saw the head which we did not ascend, there were always clouds driving in the gap between, which prevented the possibility of judging the distance with any accuracy. The extreme top of each head is perfectly flat, and about 100 yards across. The one we climbed contained several small pools, with sandy bottoms; other such pools had dried with the excessive heat of the weather, and their sandy beds were resorted to by the sheep, one of which would occasionally start up, and dart off like a

wild animal driven from its lair. These sheep are frightfully fearless of the precipices; they appear to have excellently safe feet, and no idea of the extreme danger that surrounds them. That the danger is not ideal is proved by their skeletons, seen bleaching on the sides of the mountain in every direction.

(To be continued.)

ART. XI.—*Essay on Parasitic Hymenoptera,*

By A. H. HALIDAY, M.A.

(Continued from p. 59.)

Sp. 17. R. Col. decorator. Fem. *Testaceus antennis basi, palpis pedibusque silaceis; puncto verticis thoracisque lituris metathorace abdominisque segmento 1^{mo}. nigris; terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. 2; alar. $4\frac{1}{2}$ lin.)

Caput latum, pallide testaceum, puncto vertex nigro, mandibulis apice fuscis: ocelli protuberantes: antennæ corpore longiores, graciles, 38-articulatæ; fuscae, basi subtus, articulis 1^{mo}. 2^{do}.que totis pallide flavis: thoracis dorsum fuscum aut nigricans, plaga media testacea antrorsum bifida: sulculi impunctati ante scutellum in depressionem lævem effusi: scutellum apice rufescens metathorax niger subnitidus, vage punctulatus, pubescens, linea media elevata parum conspicua: pectus testaceum puncto fusco sub alis: abdomen oblongo-ovatum, segmento 1^{mo}. nigro, 2^{do}. 3^{ti}. basi, 7^{mo}. 8^{vo}. ferrugineis, reliquis subfuscis. Segmentum 1^{um}. fere duplo longius quam latius, antrorsum sensim attenuatum, nitidum, vage punctato-rugulosum; reliqua lævissima: pedes pallide flavescentes, tarsis apice, posticis totis tibiisque iisdem apice subfuscis: alæ longæ, hyalinæ radice et squamulis flavo-ferrugineis, stigmate fusco: stigma elliptico-lanceolatum cubitum perpaulo ante medium excipiens: alæ posticæ areola brachialis-posterior $\frac{1}{2}$ anterioris brevior.

Habitat inter quercus cæduas mihi lectus in convalle Cartland Craigs dicta, prope fluenta Cluthæ.

Sp. 18. R. Col. hariolator. Fem. *Testaceus antennis basi, palpis pedibusque silaceis; capite thoracis lituris, metathorace abdominisque segmento 1^{mo}. nigris; terebra $\frac{2}{3}$ abdominis longitudine.* (Long. corp. $1\frac{1}{2}$; alar. $3\frac{1}{2}$ lin.)

Præcedente dimidio minor sed statura et sculptura absolute similis, nisi caput paulo minus videatur: hoc totum nigro-piceum, ore testaceo; pectus fusco-testaceum lineola media punctisque nigris, litura picea insuper sub alis. Tibiæ posticæ totæ fuscæ: reliqua præcedentis.

Habitat in Anglia lectus semel: *F. Walker*.

Sp. 19. R. Col. catenator. Fem. *Niger nitidus antennæ basi, palpis, pedibus (abdominisque limbo laterali) silaceis; stigmatibus fusco; abdominis segmento primo et 2^{di}. basi lineâque hujus apicem definiente rugulosis; terebra $\frac{1}{2}$ abdominis longitudine.* (Long. corp. $1\frac{1}{2}$, $1\frac{3}{4}$; alar. 3— $3\frac{1}{2}$ lin.)

Caput et thorax lævissima nitida albido-pubescentia. Occipitis margo superus tenuissimus: antennæ circiter 33-articulatæ fuscæ basi flavescentes: mesothoracis sulculi subtilissimi impunctati: metathorax declivis crebre punctulatus et pubescens, spatiis nonnullis lævigatis: abdomen thorace paulo longius et vix latius oblongo obovatum: segmentum 1^{um}. obconicum latitudine apicis fere sesquialongius, circa medium subtiliter tuberculatum rugulosum linea elevata longitudinali antrosum bifurca: segmenta reliqua breviora, longitudine parum decrescunt, 2^{dum}. basi rugoso-striatum margine laterali et postico lævigatis, 3^{um}. a secundo linea crenata discretum; reliqua lævissima ante marginem albido-ciliata, margo lateralis segmentorum 2^{de}—5^{ti} flavescit in uno exemplari, in alio vero piceus est: pedes pallide flavescentes tarsis apice, posticis totis subfuscis: alæ hyalinæ radice et squamulis flavo-ferrugineis stigmatibus fusco nervis pallidioribus: areolæ fere quales binis præcedentibus.

Habitat in Hibernia mihi semel lectus: alterum ex Anglia transmisit *F. Walker*.

Sp. 20. R. Col. funestus. Mas. *Niger palpis pedibusque sordide ochreis; abdominis segmento 1^{mo}. bicarinato, stigmatibus fusco; nervo recurrente evecto.* (Long. corp. $1\frac{1}{2}$; alar. 3 lin.)

Antennæ corporis longitudine 32-articulatæ: palporum labialium articulus 3^{tus}. perparvus: caput, thorax subtilissime punctulati pubescentes: mesothoracis sulci oblitterati: metathorax obsolete areatus abdomen obovatum: segmentum 1^{um}. basi angulatum dehinc in apicem fere aquilatum, sesquialongius quam latius carinulis duabus retrorsum parum convergentibus interstitiis punctulatis angulis apicis membranaceo marginatis: segmentum 2^{dum}.

basi punctulatum; reliqua lævia breviora: pedes ochracei aut sub-fusci: alæ hyalinæ stigmatе nervisque fuscis: stigma crassum, ovato-lanceolatum, cubitum in medio fere excipiens: nervus recurrens areolæ cubitali secundæ insertus: alæ posticæ areola brachialis posterior $\frac{1}{2}$ anterioris longitudine. Species loci ambigui, etsi longe plurimis notis cum proxime præcedentibus conveniat.

Habitat in Anglia semel lectus. *F. Walker.*

Subgen. X.—CLINOCENTRUS.

Areolæ cubitales tres, 1^{ma}. nervum recurrentem excipiens: abdomen oblongo-ovatum, segmentis 3 anticis magnis subæqualibus, 2^{do}. et 3^{tio}. imperfecte sejuncto, reliquis minutissimis: terebra exerta caput transversum.

Clinocentrus *A. H. H., Ent. Mag. I. 266.*

Rogas spp. et *Bracon* spp. *N. ab. E.*

Hi transitum parant in *Rogades* genuinos quarum alæ conformes, sunt modo angustiores, stigmatе tenuiore: quoad corporis staturam *Clinocentri* breviores sunt, capite latiore, palpis brevioribus, sculptura corporis subtiliore, abdominis ambitu subovato, incisura 2^{da}. obsoletiore, terebra longiore. Segmentum 1^{mum}. abdominis in *Rogadibus* prope basin, in his versus medium fert tubercula

Sp. 21. *R. Cl. excubitor. Niger, ore, orbita, pectore, lineola ante alas pedibusque testaceis; abdominis basin rugulosi segmento 1^{mo}. obconico. Fem. Terebra $\frac{2}{3}$ abdominis longitudine. (Long. corp. 2, 2 $\frac{2}{3}$; alar. 4 $\frac{1}{2}$, 5 $\frac{1}{2}$ lin.)*

Caput nigro-fuscum ore, clypeo, orbita testaceis; palpus pallidioribus: antennæ corporis fere longitudine, circiter 33-articulatæ, articulis 2 baseos pallide testaceis: thorax niger, margine prothoracis ante alas pallide ferrugineo; pectus fusco-testaceum: abdomen obovatum nigrum, segmento 1^{mo}. et 2^{do}. rugolosis interstitiis punctatis; 3^{tio}. punctato-ruguloso, margine laterali summo nonnunquam fulvescente; reliquis sublævibus: segmentum 1^{mum}. apice quam basi fere duplo latius, latitudine apicis vix duplo longius, linea media elevata antrorsum bifurca: pedes pallide testacei: alæ hyalinæ radice et squamulis pallide testaceis: stigmatе fuscescente basi pallido: *maris* abdomen angustius; segmenti 2^{di}. et 3^{tii}. limites adhuc magis deleti; *variat* hic plagâ sordide rufescente ante scutellum.

Adnot.—Discrimen certissimum a binis sequentibus ex abdominis sculptura rudi.

Habitat in lucis umbrosis Angliæ, Hiberniæ.

Sp. 22. R. Cl. cunctator. *Niger, ore, orbita, thoracis antici lituris, abdomine postice, pedibusque testaceis; abdominis basin striate segmento* 1^{mo}. *obconico.* Fem. *Terebra* $\frac{2}{3}$ *abdominis longitudine.* (Long. corp. $1\frac{1}{2}$ —2; alar. 3—4 $\frac{1}{2}$ lin.)

Præcedenti affinis, differt præcipue abdominis sculptura: segmenta 1^{um}, et 2^{dum}, subnitida sunt concinne striata, interstitiis haud punctatis; reliqua sordide testacea vel fusco inumbrata, 3^{tium}, subtilissime transversim aciculatum, sequentia fere lævigata: venter pallide testaceus: caput testaceum facie sub antennis, verticis medio et occipitis limbo fuscis: thorax antice cum pleuris et pectore testaceus, lituræ tres dorsi confluentes fuscæ: metathorax niger punctato-reticulatus, nec areatus: pedes pallide testacei: alæ hyalinæ stigmate pallide testaceo, apice fuscescente: *mas* differt abdominis segmentis posterioribus minus abbreviatis et latius lævigatis, nonnunquam alarum nervis exterioribus incrassatis.

Habitat in nemoribus umbrosis Hiberniæ occidentalis minus frequens.

Sp. 23. R. Cl. umbratilis. Fem. *Niger, ore, orbita, pectore, thoracis antici lituris, pedibusque testaceis; abdominis basin striati segmento* 1^{mo}. *fere lineari; terebra* $\frac{1}{2}$ *abdominis longitudine.* (Long. corp. 2 $\frac{3}{4}$; alar. 5 lin.)

Præcedenti iterum sculptura similis, sed abdomen longius et angustius; segmentum 1^{um}, antrorsum vix attenuatum, latitudine apicis plus duplo longius: hoc et secundum striata, tertium vage punctatum punctis in strias irregulares subtilissimas, versus latera transversim ductas, diffluentibus, hujus segmenti margo lateralis summus rufescit; dorsum reliquum nigro-fuscum; venter testaceus.

Habitat, cum præcedentibus, semel lectus.

Sp. 24. R. Cl. vestigator. *Niger, ore, orbita, pedibusque testaceis; abdominis basi rugulosa; mas stigmate toto fusco.* Fem. *Terebra* $\frac{1}{3}$ *abdominis longitudine.* (Long. corp. $1\frac{1}{2}$ —2; alar. 3—4 lin.)

Præcedentibus brevior, metathorace crassius rugoso: antennæ, 27-articulatæ: abdomen brevius ovatum segmentis 2 anticis, nonnunquam 3^{ti} basi, rugulosis; reliquis lævigatis, nigro, piceis; terebra *feminæ* quam illis plus duplo brevior, validior, subclavatus: alæ hyalinæ, stigmate paulo crassiore, fusco basi pallido, in *mare* toto nigro-fusco.

Variat abdominis segmento 3^{do}. lateribus testaceo, medio fusco.

Variat—*Mas* scutelli apice fusco.

Variat—*Mas* sculptura subtiliore, capite nigro facie pallide testacea.

Habitat Angliam, Hiberniam, cum præcedentibus; minus frequens.

Adnot.—In hoc subgenus referendi sunt præterea.

Rogas exertor, N. ab E. Monogr. I. 207. No. 10, (quem ne cum specie nostra 23^{ta}. conjungerem obstitit rubedo clara pedum,) et *Bracon orbitator*, ibid. 91. No. 52, Species Italica a Specie 21^{ma}. thorace toto nigro; a Sp. 24^{ta}. terebræ longitudine discrepans.—Etiam *Rogas luteus*, N. ab E. Mon. 218. No. 26, propter segmenta 2^{dum}. et 3^{tium}. fere, connata et terebram exertam transitum ex his in *Rogades* Genuinos perducere videtur.—*Bracon uncinatus* vero Spinolæ, (Ins. Lig. II. 130. No. 19), quem Neesius cum *R. exertore* conjunxit, *Rogas* Genuinus foret ni fallor, propter segmenta anteriora abdominis medio carinata.

Subgen. XI.—ROGAS.

Areolæ cubitales tres 1^{ma}. *nervum recurrentem excipiens; brachialis posterior anteriorem longe superans; stigma lanceolatum: abdomen oblongum sessile, segmentis 3 anticis subæqualibus discretis, reliquis brevissimis; terebra recondita aut subexerta.*

Rogas *Curt. Br. Ent.* 512.

— *A. H. H. Ent. Mag.* I. 266.

**Rogas*, Sect. II. Gasteratores, N. ab E. *Act. Acad.* IX. 306.

— *Monogr.* I. 199. 206.

Bracon, Fam. III. Genuini — *Berl. Mag.* V. 30.

Bracon, Fam. II. *Spin. Ins. Lig.* II. 120.

Schizodes *Wesm. Mon. Brac. Belg.* 171.

Bracon, Spp. *Jurine*.

Bassus, Spp. *Fabr.*

Ichneumon, Spp. *Fabr.*

Corpus in his fere lineare, nusquam coarctatum: caput thoracis vix latitudine transversum, occipite parvo acute marginato, oculis

prominulis: antennæ corporis longitudine articulis flagelli plurimis, breviusculis, arcte contiguis: mandibulæ perbreves trigonæ porrectæ: labrum elongato-trigonum, epipharyngis apice angulum anticum truncatum reficiente: palpi longiusculi, labialium articuli exteriores longitudine subæquales: thorax subcylindricus, mesothoracis sulculis inconspicuis; metathorace haud distincte areato, linea media elevata: abdomen lineare aut lineari-obovatum; segmenta tria anteriora majora, longitudine plerunque decrescencia et latitudine crescentia, sæpe exculpta et linea media elevata; 2^{dum}. a 3^{io}. linea profunde incisa sejunctum; reliqua brevissima cito decrescencia: terebra recondita aut subexerta: stigma lanceolatum est, cubitum in medio plerumque recipiens, nervus recurrens areolæ 1^{mæ}. cubitali insertus longe ante apicem; areola brachialis-posterior anteriorem longe superat (ut in *Microgastre*) ideoque postica disci multo brevior est in anticâ: nervus recurrens alæ posticæ perparvus sæpe evanescit: species plerumque majores sunt ut in hoc Genere et inter nostrates. De vita et indole nil fere traditum est. Species quædam e larva *Zygænæ Filipendulæ* Neesio prodibat.

SECTIO A. *Areola cubitali 2^{da} oblonga.*

Sp. 25. *R. rugulosus*. *Niger; pedibus crassis rufis, tibiis posticis pallidioribus, apice tarsisque iisdem totis nigris; abdomine antice attenuato, postice lævissimo nitido.*
(Long. corp. $3\frac{1}{2}$ — $3\frac{2}{3}$; alar. $5\frac{1}{2}$ —7 lin.)

Rogas rugulosus, *N. ab. E. Monogr.* I. 209. No. 13.

**Bracon* id. ——— *Berl. Mag.* V. 32. $\frac{2}{3}$ No. 49.

Antennæ plusquam 50-articulatæ nigræ: palpi nigro-fusci aut rufopicei: thorax subtiliter confertim punctulatus: metathorax punctulato rugulosus: abdomen antrorsum magis attenuatum quam sequentibus; segmenta posteriora et etiam minus abbreviata sunt, postrema vero in *femina* compressa: segmenta 1^{um}. et 2^{dum}. striata sunt et inter strias punctulata 3^{tium}. basi tantum intricatim punctatum, hoc apice et reliqua lævissima nitida vage pubescentia: pedes validi sunt tarsique breviores et crassiores quam in ulla alia specie: coxæ omnes rufæ; femora postica apice subinfuscata: tarsi anteriores apice, postici totis cum apice tibi- arum earundem nigri: alæ solito majores hyalinæ cinerascetes, radice et squamulis ferrugineis, vel harum puncto fusco, nervis et

stigmatibus fuscis: stigma apice solito magis attenuatum; areola radialis angustior: nervus brachialis-recurrens anterior valde obliquatus est: nervus recurrens alae posticae fere deletus: maris abdomen gracilius apice lenius attenuatum.

Var. a.—Abdomine toto nigro.

Var. β.—Litura picea, mox in fasciam rufam ampliata segmenti 1^{mi}. apicem 2^{dum}. vero totum ad summum occupante.

Var. γ.—Segmentis 1^{mo}. et 2^{do}. totis clare rufis.

Habitat Germaniam N. ab E.—Angliam, Hiberniam, autumnis non infrequens.—Apricatur in umbelliferis.

Adnot.—Sculptura hujus subtilior est quam cæteris nostratibus.^a

Sp. 26. *R. nobilis. Niger abdominis segmentis 1^{mo}. 2^{do}. et 3^{ti}. basi rufis; reliquis nigris, dense flavo-kirtis vitta media et margine nitidis: pedibus rufis, femoribus tibiisque posticis tarsisque apice nigris.* (Long. corp. 2 $\frac{1}{2}$; alar. 5 lin.)

R. nobilis. Curt. Br. Ent. 512. No. 8.

Antennarum scapus niger, flagellum piceo-rufum apice nigricans: os rufo-ferrugineum, palpi pallidiores: collare et propectus, abdominis segmenta 1^{mum}. 2^{dum}. et 3^{ti}. basis, pedesque rufo-ferruginei; segmentum 1^{mum}. base nigro-maculatum, segmenta posteriora citius abbreviata quam præcedenti, confertissime punctulata villis densis flavis decumbentibus oblecta, margine postico segmenti singuli et vitta longitudinali lævi intente: pedes perpaulo

^a Sp. 25.^b *R. tricolor. Rufus, metathorace, antennis pedibusque nigris; abdominis segmentis 1^{mo}. et 2^{do}. albis basi nigro-maculatis, reliquis nigris margine albo; alis fuscis basi subhyalinis.* (Long. corp. 3 $\frac{1}{2}$; alar. 7 $\frac{1}{2}$ lin.)

Caput, thorax antice, cum pleuris et pectore lævissima nitida rufa: mandibulae apice nigro-piceae, palpi picei basi rufi: antennae circiter 66-articulatae, nigrae: metathorax rotundato declivis, subtiliter punctulatus, niger nitidus: abdomen thoracis latitudine; segmentum primum, antrorsum sensim attenuatum et secundum punctulata, linea media elevata, alba illius macula magna scutiforme baseos, hujus macula multo minora nigra; segmenta reliqua nigra margine postico albo: venter albus, segmentorum 1^{mi}. et 2^{di}. macula communi nigra utrinque, 3^{ti}. macula magna biloba, reliquis basi nigris: pedes nigri: alae fuscae, basi subhyalinae, nervis fusco-limbatis, stigmatibus fusco, radice et squamulis pallide rufis: areolae fere ut in nostratibus anticae disci parum remota: terebra recondita.

Habitat Australasiam: communicavit *F. Walker.*

Adnot.—Propter sculpturam læviorem quam in nostratibus, hæc species primo aspectu pro *Bracone* accipi posset, a quo genere tamen longe distat.

graciliores quam præcedentis, validiores quam reliquis : tarsorum articulus ultimus tantum niger, etiam femorum et tibiæ posticorum apex : alæ breviores, cinerascenti-hyalinæ radice et squamulis flavo-ferrugineis nervis stigmatæque fuscis : areolæ fere ut in præcedente : alæ posticæ nervus recurrens obsoletus.

Habitat in Hibernia boreali mihi semel lectus.

Sp. 27. *R. gasterator*. *Niger abdominis* 1^{mo}. et 2^{do}. segmento, 3^{ti}. basi pedibusque rufis; abdominis apice lævi nitido. (Long. corp. 3—3½; alar. 5½, 5¾ lin.)

Rogas Gasterator . . . *N. ab E. Monogr.* I. 212. No. 18.

**Bracon* id. *Jurine, Hym.* Tab. VIII. Fig. 5.

Id. id. *Var.* III. *Spin. Ins. Lig.* II. 121. No. 14.

Femina sola quæ adest differt a plerisque sequentibus tarsis brevioribus crassioribus : mandibulæ rufæ sunt, palpi picei apice rufi : antennarum flagellum basi piceo-rufum : collare rufum : abdominis segmenta anteriora rugulosa, 1^{mum}. et 2^{dum}. tota, 3^{tium}. basi rufa; reliqua nigra nitida subtilissime punctulata flavo-pubescentia in apicem rotundatum cito abbreviata : pedes rufi, tarsorum apice solo fusco : alæ subhyalinæ radice et squamulis ferrugineis, stigmate flavo-testaceo apice infuscato.

Mas ab *F. Walker* transmissus e Gallia meridionali congruit quidem abdominis apice lævi sed in multis discrepat : thorax niger : abdominis segmenta 1^{mo}. 2^{dum}. tota, 3^{tium}. basi rufa : pedes rufi, coxis et trochanteribus superis, femorum et tibiæ posticorum apice nigris, tarsis fuscis : alæ ut in sequente.

Habitat Italiam, Germaniam, Helvetiam. *Auctt.*

Sp. 28. *R. geniculator*. *Niger abdominis segmento* 1^{mo}. apice 2^{do}. toto, 3^{tio}. basi rufis; pedibus rufis; abdominis apice punctulato. (Magnitudo præcedentis.)

**Rogas geniculator*. . . . *N. ab E. Monogr.* I. 211. No. 16.

Bracon rugulosus, Var. β. ——— *Berl. Mag.* V. 33.

Hujus tantum bina exemplaria vidi, quæ præcedenti perquam similia, tarsis longioribus, abdominisque apice subopaco discrepant : mares ambo in altero : segmenta 1^{mum}. et 2^{dum}. rufa sunt, illius tantum maculæ baseos nigra, 3^{ti}. basis concolor : pedes rufi, coxis anticis basi, femoribus tibiisque posticis apice nigricantibus; tarsi fusci annulis rufescentibus : palpi picei : alæ

fumato hyalinæ radice ferruginea, squamulis subfuscis stigmate brunneo puncto baseos pallidiore areola cubitalis 2^{da}. brevior quam in *R. ruguloso*: in altero segmenti 1^{mi}. margo posticus et 2^{dum}. totum rufa sunt, reliqua nigra: pedes rufi, coxis anticis totis, femoribus tibiisque posticis apice, tarsisque nigris: palpi picei.

Habitat Italiam, Germaniam N. ab. E. Ubique rarius esse videtur: exemplar in Cæsaria Insula, et alterum in Anglia lectum transmisit *F. Walker*.

Adnot.—De tribus proxime præcedentibus quid dicam nescio: mirum foret unam speciem tantas formæ, coloris et sculpturæ mutationes subire: itaque seorsim exhibui in præsens, dum melior copia exemplarium dubia solvat.

Sp. 29. *R. alternator*. *Rufus, capite, thorace et abdomine postice, pedumque posticorum geniculis nigris; abdominis apice punctulato*. (Long. corp. 3; alar. 5½ lin.)

**Rogas alternator*. *N. ab E. Monogr. I. 213. No. 20.*

—— balteatus. *Curt. Br. Ent. No. 12 et Fig.*

Caput cum antennis nigrum, orbita postica et scapi basis piceæ, palpi nigro-picei (secundum *Neesium* testacei): thorax rufo-testaceus, scutelli apice, metathoracis dorso et pectore nigris: abdomen oblongum, nec basi attenuatum, segmentis anterioribus rugulosis linea media elevatâ, posterioribus punctulatis; 1^{mo}. et 2^{do}. rufo-testaceis, illius basi nonnunquam nigro-maculata: 3^{tium}. vel basi rufescens, vel totum nigrum: pedes quam præcedentibus graciliores, sed validiores quam *R. testaceo*, rufo-testacei; femorum et tibiæ apice (saltem posticorum,) tarsisque fere totis fuscis: alæ cinerascens nervis fuscis.

Habitat Germaniam N. ab. E.—Hiberniam borealem.

Sp. 30. *R. bicolor*. *Niger, capite, thorace antice, pedibusque rufis; abdominis punctulati, basin rugulosi, lateribus subsinuatis*. (Long. corp. 2½—3½; alar. 4½—5½ lin.)

Rogas bicolor. *N. ab E. Monogr. I. 213. No. 21.*

**Bracon id.* *Spin. Ins. Lig. II. 128. No. 18.*

Sculptura hujus crassior: metathorax reticulatus linea elevata distinctiore: abdomen late rugulosum, apice punctato opacum,

basi nonnil attenuatum, incisuris coarctatis (3^{tia}. præsertim;) segmentis intermediis utrinque prope stigmata leviter foveolatis postremis valde abbreviatis; linea elevata media usque in 3^{tium}. continuata: terebra subexerta: colores variant ultra modum: in *Genuinis feminis* rufa sunt caput, thorax antice cum scutello, pedesque; nigræ antennæ, pectus, metathorax et abdomen: tarsi, et nonnunquam genua postica, fuscis: alæ obscure hyalinæ, nervis fuscis, stigmate fusco-ferrugineo, basi pallescente; in *mare* præterea nigra sunt vertex medio cum genis, et scutellum.

Var. β.—Niger, ore, orbita, thoracis antici lineis, pedibusque rufis; femoribus tibiisque posticis apice fuscis; coxis posticis rarius basi nigris.

Var. γ.—Niger, ore, orbitaque rufescentibus; pedibus rufo-testaceis, posticorum geniculis tarsisque fuscis.

Rogas ater. *Curt. Br. Ent.* 512. No. 1.

Var. δ.—Orbita postica vix rufescente; reliqua *Var γ.*

Rogas prærogator. *N. ab E. Monogr.* I. 219. No. 27.

Bracon id. ——— *Berl. Mag.* V. 33. No. 52.
(*Synon. demt.*)

Var. ε.—Niger, ore, orbita, prothoracis lituris, lineola sub scutello, abdominis segmenti 1^{mi}. lateribus et apice, 2^{do}. toto, 3^{ti}. basi, pedibusque rufis.

Variat insuper (Spinola teste) abdominis dorso postice rubescente, vel etiam abdomine toto rubro.

Habitat Italiam, Germaniam, *Auctt.*—Angliam, Scotiam, Hiberniam, minus frequens: in arenis maritimis ut plurimum mihi obviis.

Sp. 31. R. testaceus. Colore mutabilis, pectore semper testaceo; pedibus pallide testaccis, vel fusco-annulatis. (Long. corp. 2 $\frac{1}{4}$ —3 $\frac{1}{4}$; alar. 4—6 lin.)

Rogas testaceus. *N. ab E. Monogr.* I. 215. No. 24.

Bracon id. ——— *Berl. Mag.* V. 34. No. 53. Tab.

II. Fig. 9.

Id. id. *Spin. Ins. Lig.* II. 131. No. 20.

Bassus id. *Fabr. S. P.* 101. No. 31.

**Ichneumon id.* *Fabr. E. S. Suppl.* 228. No. 189.

R. circumscriptus. *N. ab E. Monogr.* I. 216. No. 25.

- Var. a.* *R. ochraceus.* . *Curt. Br. Ent.* 512. No. 4.
Var. η. *R. similis* No. 6.
Var. γ. *R. subucola.* No. 5.
Var. θ. *R. spathuliformis.* No. 11.

Recedit hic nonnil a reliquis (transitum in *Clinocentros* parans,) antennarum articulis paucioribus, nec tam arcte contiguïs, palpis brevioribus, pedibus gracilibus, alis amplis, stigmate crassiore, areola disci antica parum remota, cubitali mediâ longiore. Sunt vero valde inconstantes magnitudine, colore et forma, namque exemplaria majora, longiora, metathorace subcylindrico, antennarum articulis pluribus, *R. testaceum* N. ab E. exhibent; minora vero, metathorace rotundato-declivi, antennis brevioribus, articulis paucioribus, *R. circumscriptum* ejusdem quæ tamen sensim confunduntur nec colorum legem qualem ille expressit servant.

Antennæ corporis longitudine vel paulo breviores, 33—48-articulatæ: metathorax punctulatus, lineola elevata tenui: abdomen basi nonnil attenuatum, antrorsum subtilissime striolatum, postice lævigatum: alæ latiores unde plura discrimina a congeneribus oriuntur; præsertim vero alæ posticæ areolæ brachiales latiores, nervus recurrens disci distinctus.

Var. α.—Flavo-testaceus, antennis apice punctoque verticis tantum fuscis; pedibus pallidioribus; stigmate concolore.

Var. β.—Flavo-testaceus, stigmate fusco basi puncto pallido.

Var. γ.—Testaceus metathorace abdominisque segmento 1^{mo}. fuscis; stigmate flavo-testaceo immaculato, vel litura subfusca.

Var. δ.—Segmenti 2^{di}. lateribus insuper fusco-limbatis.

Var. ε.—Metathorace, abdominis basi, limbo et apice fuscis.

Var. ζ.—Verticis medio, thoracis antici lituris fuscis; reliquæ ut in *Var. γ.*

Var. η.—Segmente 2^{di}. limbo laterali insuper fuscescente.

Var. θ.—Fuscus, ore, orbita, thoracis antici lineis, scutelli apice, pectore, abdominis plagâ oblongâ mediâ, pedibusque testaceis.

Var. ι.—Femoribus posticis extrorsum late fuscis, nonnunquam mediorum et tibiæ posticarum apice fuscescente; reliqua ut ζ.

Var. κ.—Pedes ut in *Var. ι.*, reliqua θ.

Habitat passim per Europam; in Hibernia obvius per æstatem totam et usque in finem Octobris: nusquam frequentiores vidi quam indumentis rupestribus ad litora insulæ Sciæ, Augusto mense.

SECT. AA.—*Areola cubitali media breve trapeziformi.*

Sp. 32. R. dispar. Fem. *Rufus capite, thorace antice, abdomine postice nigricantibus; antennis tricoloribus; alis cinereis lineola hyalina.* Mas. *Testaceus, thoracis lituris abdominisque dorso subfuscis; antennis gracillimis; alis glauco-hyalinis.* (Long. corp. 3; alar. 5 lin.)

Rogas dispar. *Curtis, Br. Ent. 512. No. 10.*

Statura gracilis corpus *feminæ* totum fere punctis elevatis scabrum et opacum: caput solito minus oblatum fronte protuberante: antennæ corpore paulo breviores quam in reliquis validiores fere ad $\frac{1}{3}$ longitudinis rufæ, deinde fuscæ, articulis 15^{mo}.—19^{mo}. albis: mandibulæ ferrugineæ; palpi albidi basi fuscis: thorax antice cum scutello nigricans: mesothoracis sulculi obliterate: metathorax cylindricus et prope foramen apicale denticulo minuto auctus, rufus: abdomen a basi angusta in apicem segmenti 3^{ti} recta dilatatum tum reliqua sub hujus margine retracta, apiculam parvam rotundam membranaceam tantum exhibentia: segmenta 2 anteriora rufa, lineâ mediâ elevatâ, punctato-rugulosa: 3^{tium}. confertim punctatum nigrum: pedes quam in præcedente parum validiores, rufescentes, femoribus apice fuscis, trochanteribus omnibus et coxis anterioribus, posticis modo subtus, pallidis: alæ anticæ fusco-cinereæ stigmatе flavo apice fusco, nervis nonnullis areæ cubitalis lineolâ hyalinâ signatis sub stigmatе alæ posticæ subhyalinæ.

Mas longior; caput latius, fronte non protuberante: antennæ corpore fere longiores, graciliores quam in ullo alio ex *Ichneumonidis*, fuscæ basi rufescentes: capitis thoracisque sculptura multo subtilior quam *feminæ*: color testaceo fuscoque mixtus: metathorax et abdominis dorsum fusca: abdomen angustum lineare: segmentum 1^{um}. basi sensim attenuatum 2^{dum}. et 3^{tium}. subtiliter rugulosa, linea media elevata tenui: 4^{tum}. 3^{to}. dimidio brevius confertim punctatum; reliqua fere retracta lævia: pedes prælongi et gracillimi, pallide testacei unguibus crassiusculis fuscis: alæ glauco-hyalinæ radice et squamulis ferrugineis, stigmatе flavo apice infusato fascia pallida sub stigmatе; areolæ alarum satis conveniunt in utroque sexu stigma quam reliquis tenuius: cubiti abscissa 1^{ma}. 2^{da}. longior, quod valde insolitum: areola cubitalis 2^{da}. brevis trapeziformis, antrorsum valde attenuata nervo anteriore interioris longitudinem vix æquante: cubitalis 3^{ta}. prælonga; antica disci parum remota:

areolæ posteriores angustiores brachiales solito minus elongata : alæ posticæ brachialis vix $\frac{1}{2}$ anterioris longitudine, nervus recurrens manifestus.

Habitat in pinetis Hiberniæ borealis et Scotiæ, Augusto mense at infrequens.—Etiam in Anglia lectus. *J. C. Dale.*

Supersunt tres species Europæ septentrionalis incolæ, sed intra fines Britanniæ hactenus non inventæ quantum mihi innotuit.

1. *R. dissector*, N. ab E. Mon. I. 208, No. 11.—2. *R. signatus*, ibid. 210, No. 15, qui forsitan inter varietates *R. bicoloris* annumerandus erit.—3. *R. Zygaenæ*, ibid. 210, No. 14, a varietate nigra ejusdem ut videtur sculpturâ longe subtiliore discrepans.—Species reliquæ Cisalpinæ sunt neque sperandæ sub nostro cælo. 4. *R. reticulator*, ibid. 211, No. 17.—5. *R. cruentus*, ibid. 212, No. 19.—6. *Bracon coxalis*, Spinola, Ins. Lig. II. 126, No. 17.—7. *Br. unicinctus*, ibid. 130, No. 19.—8. *Br. dimidiatus*, ibid. 123, No. 15, qui nostro *R. dispari* affinis videtur.

Rogas luteus, N. ab E. Mon. I. 218, No. 26, propter sculpturam thoracis et incisuram abdominis 2^{dæ} imperfectam dubius est etiam *Bracon bifasciatus*, Spin. Ins. Lig. II. 125, No. 16, pulchra species post Spinolam nemini visa, pro *Rogade* genuino vix accipi potest ob terebram longiorem.

Subgen. XII.—ADEMON.

Areolæ cubitales tres; radialis apice incompleta; stigma tenuissimum: alæ posticæ nervus recurrens disci nullus. Abdomen sessile oblongo-lanceolatum segmentis 2^{do}. et 3^{tio}. discretis, posterioribus brevissimis, terebra recondita, antennæ pedesque gracillimi, feminæ ungues elongati.

Ademon *A. H. H. Ent. Mag. I. 266.*

Rogas, Sectio III. decrescentes, N. ab E. *Act. Acad. IX.*

————— *Monogr. I. 220.*

*Bracon, Fam. III. Heterocl. A. ——— *Berl. Mag. V. 34.*

Sp. 33. R. A. decrescens. *Abdominis segmento 3^{tio}. transversim carinato.* (Long. corp. 1—1 $\frac{3}{4}$; alar. 2 $\frac{1}{2}$ —3 $\frac{1}{2}$ lin.)

Rogas decrescens, N. ab E. *Monogr. I. 220, No. 28.*

*Bracon id. ——— *Berl. Mag. V. 35, No. 55.*

Rogadibus Genuinis statura satis similis. Caput transversum, latitudine thoracis, rugosum, occipite lato hujus et genarum finibus acute prominulis; oculi prominuli: antennæ corpore breviores,

21—27-articulatæ flagelli articulis interioribus prælongis, exterioribus cito decreascentibus : articulus ultimus penultimo non longior, 3^{tus}. quatuor ultimis æqualis. Oris partes fere quales in Subgenere præcedente : palpi paulo breviores, maxillarum articulus 4^{tus}. ratione reliquorum magis elongatus ; labialium articuli exteriores ovati, decreascentes. Thorax oblongus scabriculus, collari brevi porcato ; mesothoracis lobo medio canaliculato et utrinque carinula seu plica elevata antrorsum angulata instructo ; fovea porcata scutelli basin sejungente ; metathorace truncato, crasse rugoso-reticulato : abdomen *feminæ* subconvexum, oblongo-ovatum, segmentis 1^{mo}. 2^{do}. longitudine paribus sed antrorsum attenuatis, dense punctato-scabris ; 3^{tum}. 2^{do}. duplo brevius, punctatum margine postico lævi depresso carinulam transversam fingente, 2^{dum}. a 3^{tio}. linea arcuata profunde impressa sejunctum : reliqua breviter lineari-transversa, lævia vel 4^{tum}. basi punctulatum ; ultimum minutum conicum terebra recondita : pedes prælongi et graciles unguibus in *femina* elongatis : alæ angustæ, stigmate tenuissimo cuneiformi, cubitum ultra medium excipiente : nervus recurrens apici areolæ cubitalis 1^{mæ}. insertus : cubitalis 2^{dæ}. nervus anterior interiore non longior : nervi longitudinales ante marginem alæ evanescent, ideoque areola radialis apice incompleta est ; brachialis posterior anteriore parum longior : alæ posticæ perangustæ nervo disci recurrente nullo, areola brachiale posteriore $\frac{1}{2}$ anterioris longitudine.—*Maris* sculptura sæpe subtilior, abdomen subdepressum, longius, segmentis posterioribus minus abbreviatis, 3^{tio}. que lævior.

Variat quam maxime coloribus, ut varietates terminis nullis nec numero compescendæ sint. Commemorabo insigniores in serie duplici.

—1°. Alæ fumatæ stigmate nervisque fuscis : corpus nigrum abdomine postice nonnunquam piceo ;—*mares, feminæque*.

Var. α.—Pedes nigro-fusci trochanteribus dilutioribus aut flavis, in aliis insuper tibiæ et tarsorum basi dilutius fuscis.

Var. β.—Coxæ femora et tibiæ basis fusco-ferrugineæ ; vel pedes ferruginosi, tibiis tarsisque apice fuscis.

Var. γ.—Prothoracis macula laterali rufa ; reliqua *Var. α.*

—2°. Alæ flavicantes basi et apice subfuscæ, stigmate flavo, nervis extrorsum depallescens. — Nullus *mas* in hac serie mihi obviavit.

Var. δ.—Niger prothorace rufo, segmentorum 3^{tii}. 4^{ti}. margine postico et sequentibus piceis : pedes nigro-fusci trochanteribus flavis, tibiis basi, tarsis fere totis ferrugineis.

Var. ε.—Niger, thorace antice abdominis segmento 4^{to}. et sequentibus rufis, femora nigro-fusca, tibiæ fuscæ, coxæ tarsique fere toti ferruginei, femora apice et tibiæ basi flavæ, in aliis litura rufa occipitis et alia sub antennis.

Var. ζ.—Rufus, vertice, metathorace, abdominis segmento 1^{mo}. nigris: antennæ nigræ: pedes fuscis, coxis, femorum apice, tibiarum basi tarsisque late flavo-testaceis; trochanteribus flavis,—in aliis metathorax et segmentum 1^{mu}m. tantum medio infuscata sunt,—in aliis color abdominis pedumque magis flavo-testaceus, femorum posteriorum ima basi, tibiis tarsisque apice fuscis.

His omnibus alarum radix et squamulæ rufæ sunt puncto nigro.

Habitat Italiam Germaniam, N. ab E.—Angliam, Hiberniam, Ebrides Insulas.—In Anglia rarius esse videtur quum inter collectanea ditissima *F. Walkerii* nonnisi unicum exemplar obvium erat.—In Hibernia deprehendi fere gregarium per margines fluviorum plantis aquaticis insidentem.

Adnot.—Altera species *R. mutuator*, N. ab E. Monogr. I. 221. No. 29. mihi invisâ Germaniam habitat.

Explicit Genus Rogas.^b

ART. XII.—*Some Scraps by the Author of the Delta Letters.*

THE early historians of the conquest, or rather the destruction of America, present us but too often with little, save details of horrid atrocities committed on those harmless, innocent lambs (as the truly excellent Bishop of Chiassa calls them) the native Americans. How heart-rending are these details!

The hand that mingled in the meal,
At midnight drew the felon steel,
And gave the host's kind breast to feel
 Meed for his hospitality.
The friendly hearth which warmed that hand,
At midnight armed it with the brand
That bade destruction's flames expand
 Their red and fearful blazonry.
Then woman's shriek was heard in vain;
Nor infancy's unpitied plain,
More than the warrior's groan, could gain
 Respite from ruthless butchery.

^b The characters of the Subgenus *Heterospilus*, which should be in connexion with the foot-note in page 47, have been misplaced in printing.

The hurricane that whistled shrill,
 The thunders echoing round each hill,
 Though wild and pitiless, had still
 Far more than Spanish clemency.

Long have my harp's best notes been gone,
 Few are its strings, and faint their tone;
 They can but sound in desert lone
 Their grey-haired master's misery.
 Were each grey hair a minstrel string,
 Each chord should imprecations fling,
 Till startled earth aloud should ring
 Revenge for blood and treachery.

Amongst these "tigers in human form" there were, however, some who could pause in their career of blood and cast a glance—a short one, truly!—over the pure page of nature. They read that page wrongly, or did not read it enough to have their minds softened by its perusal. The *auri sacra fames* was their ruling passion, and that,

Like Aaron's serpent, swallowed up the rest.

However, amongst the Conquistadares, some were curious in investigating the nature of the country, the customs of the people, &c. whom they were destroying, and from these many an interesting fact has been handed down to the more regular chroniclers, sometimes, however, not unmixed with fable.

In my perusals of these Chronicles, which often occupy my leisure hours, I sometimes find little scraps of natural history, which may serve to amuse some of your readers, if they do not profit them much. Of these I mean, if you so please, to forward you occasionally a few small extracts. Though I may not always keep quite close to Entomology, I shall expect that you will not be more severe to me than you have been to other of your correspondents, whose wanderings you have overlooked until they have run into dissertations on patten-rings, saints, blacksmiths, Windsor Castle, Versailles, *et de omnibus rebus et quibusdam aliis*.

At present I mean to confine myself to Entomology, to the narration of a fact purely entomological. I will neither enter into the history of the marvellous bird seen by *muchos y muy buenos Christianos*, which was very like a kittiwake, but had one foot like a hawk's, and one like a duck's, by means of which structure it played the part of a hawk on land, and a gull on

the water; neither will I go into the history of the aviaries or the serpent-houses of Montezuma; nor of the little bags found in his treasure-house containing entomological specimens; nor of those trees into whose bark the humming-birds, when flowers were scarce, thrust their beaks, and remained fixed there till the rainy season revived the flowers, when they drew out their beaks and flew away; nor yet of those trees whose leaves when they dropped became beetles. But, gentle reader, the subject I have chosen will serve to show how weak man is against the smallest insects, and how these little creatures can involve him in ruin, destroying in a few days the labour of years; I mean the "plague of ants" which in the year 1519 desolated the Queen of the Antilles and the adjoining island of San Juan de Puerto Rico.

The learned Antonio de Herrera, Coronista Mayor de su Magestad de las Indias y Coronista de Castilla y Leon, (I like to have name and titles at full length,) informs us that the Hieronymite Fathers not only took care (à la mode Espagnole, of course) of the Indians, but also persuaded the Spaniards to form farms, make plantations, and pay attention to agricultural affairs. That at their persuasion the cultivation of the *Cassia fistula* was commenced, which succeeded there so well that it appeared as if the soil had been made expressly for the purpose, and that had all the inhabitants of Europe, Asia, and Africa, taken to using the fruit of it instead of bread, enough could have been grown in Española to supply them. Moreover, a Spaniard of the name of Aguilon had brought in the year 1506 some plants of the sugar-cane from the Canaries, which did so well that the Bachiller Bellosa, a resident in St. Domingo, a surgeon, native of Verlanga, began a regular manufactory of sugar.

Now, as the poor Indians were pretty well exterminated, the Spaniards had got numbers of negro slaves for these plantations, and they had thrived so well that it was a firmly established opinion that a negro would never die save by hanging him,—an experiment no doubt tried by the planters as often as circumstances occurred to render it expedient. "In fact," says the learned Coronista, "they and the orange-trees found in Española a country better suited to them than even their native clime." But, notwithstanding this, when they had been set to labour at the sugar works awhile, they

did sometimes die without hanging, which the Spaniards attributed chiefly to their manufacturing spirituous liquors from the canes, and therewith getting drunk at times, though some thought that hard work had a little helped to kill them. The negroes, though liking the liquors, not liking the extreme labour they had to endure, ran away at times; and this,—as there was great plenty of them,—brought them, when captured, to their natural end, namely, the gallows.

In spite of these little troubles with runaway negroes, the plantations were now (in 1519) flourishing, and the planters rejoiced in a good return for their troubles; but on a sudden all this pleasant prospect was destroyed by a dire calamity which fell upon them. This was a “plague of ants,” to such an extent, that fears were entertained of its causing the abandonment of the Islands of Española and Porto Rico. “As to the ants,” says Oviedo, “I do say that in this island of Española there are very many, and especially in this city of Sancto Domingo, many more than we wish for, though infinitely fewer than formerly,”—that is to say in the years 1519-20, and part of the year 1521.

Countless were the myriads of myriads which desolated every plantation, especially of Española. Though in Porto Rico they were equally numerous, yet they were smaller, and not so injurious to the trees, but their sting was much more acute. Already in the glorious Vega of St. Domingo, extending from sea to sea above eighty leagues, watered by innumerable limpid streams, and blessed with a most fertile soil, had innumerable plantations been formed. The Franciscans, in particular, had a most magnificent orchard of orange trees of every variety, pomegranates, and *Cassia fistulæ*. In a moment all was destroyed. The ants attacked them at the roots; and “immediately,” says Herrera, “as if fire had fallen on them from heaven, they were withered and destroyed. Such was, likewise, the fate of every plantation in the Vega and the rest of the island. Wherever the ants were, there was desolation; and the ants were everywhere. Even the houses in the city were filled with them; and to sleep safe from them at night, it was necessary to place the feet of the bed in large vessels of water.

“And in the time of this plague,” says the gallant Alcayde of the fortress of the city of St. Domingo, “hardly could any persons live in their houses, neither could they keep provisions

of any kind from being covered with infinite swarms of small black ants; and had it continued much longer thus, it would not have been surprising had it happened to this island as to a city of Spain." Now it appears, from the Alcayde's statement, that this city was deserted by its inhabitants because the rabbits round about had multiplied so much that they burrowed under the town until the inhabitants, fearing lest their houses (the foundations being destroyed,) should tumble down about their ears, thought fit to run away. Moreover, he informs us, that in Thessaly a like misconduct on the part of the moles caused another city to be abandoned. In France another city was deserted on account of—of what, thinkest thou, kind reader?—the frogs. Another in Africa shared the same fate from the swarms of locusts; one in Italy from the vipers. Thus much sayeth the Capitan Gonzalo Hernandez de Oviedo y Valdez, Alcayde de la fortaleza de la ciudad de S^{to}. Domingo, &c. Turn we now to the Coronista mayor.

From him we learn that some tried to thin them by digging trenches round the trees, and filling them with water; others tried fire; but nothing availed them in the least. If millions were destroyed, tens of millions replaced them. "The Franciscans of the Vega placed a lump of corrosive sublimate, weighing three or four pounds, on the flat roof of the monastery; all the ants in the building at once ran to it, and, biting it, fell down dead; and as though messengers had been sent to invite all within half a league to a banquet, the roads were filled with them. They scaled the walls, and tasting the poison, fell dead like their companions, until the roof was blackened with them. This continued as long as the lump of sublimate lasted." Then the friars having found that they gained nothing by this experiment save the bringing fresh swarms of ants, did not care to renew it. It seems that they were much puzzled at two things, first, to ascertain what instinctive knowledge the ants possessed to guide them to the sublimate; secondly, considering how hard the sublimate was, to account for their being able to bite it, they being so small and weak.

The Spaniards were now, by the continuance of this plague, reduced to the greatest tribulation. It seemed as though an avenging Providence was punishing them for their atrocities; and, the more to humble them, had chosen these small creatures as the instruments of his wrath. At last they resolved to choose

by lot some saint to intercede for them; whereupon the Bishop Alexander Geraldinus, the Clergy, and all the citizens of St. Domingo, made a very solemn and grand procession; the bishop said a solemn pontifical mass, made a most devout prayer, took the catalogue of saints, wrote the names on slips of paper, blessed them, shook them together, and the first name drawn was that of St. Saturninus,—“the glorious St. Saturninus, who was born at Rome, and sent by the Pope to preach at Thoulouse on account of his great sanctity.” No sooner does he enter the city than—

“The oracles are dumb;
No voice or hideous hum
Runs through the arched roof with words deceiving.
Apollo from his shrine
Can no more divine.”

This of course did not please Apollo's priests, and they persuaded the people to put the saint to death. The people, therefore, tied him to the tail of a bull, and thus was he dragged through the city till he was dashed to pieces,—“as is written more at large in the history of his glorious martyrdom.”

Through the intercession of the saint, or some other cause, the numbers of ants soon began to diminish: “and if they are not yet all gone, it must be that all are not clear of sins.”

Oviedo especially desires two things to be noted, namely, that the bishop, who was a very holy man, was, like the saint, a Roman; item, that whereas the idols of Thoulouse were by the saint's presence struck dumb, his being chosen was to show idolatry was soon to be destroyed in the island. This actually did soon happen, because very soon the Indians were annihilated, or nearly so. Previous to this time, Tarquemada tells us that the priests were in the habit of passing their time away in chatting with the evil spirits which the idols represented, and which spoke from the lips of these images.

But though the ants were now nearly gone, the trees and plants they had attacked did not recover; but new plantations were formed to remedy the mischief, and again the plantations flourished.

“But even now,” says the gallant captain, “there is no want of ants, but rather, there are more than we want.”

These are chiefly of two casts, both rather red in colour : of these one is mischievous, the other not ; “and it appears that they divide the soil between them, and keep it divided in good earnest, for the spot of ground is clearly marked out which one sort possesses without doing any mischief, and that which the other occupies causing destruction ; and the good sort will not allow the bad to pass these limits. And what I now say is well known to all in this city and island to be true, and I can show it in a plantation of my own, one league from this city, and also it may be seen in many parts of this island.”

Truly if the people of Española were delivered from their troubles by St. Saturninus, I should much doubt his humanity. Happy would it have been had the Spaniards been driven from every inch of ground they possessed in that glorious new world Columbus gave them ; but, perhaps, the day is not far distant when Spain will be without a colony there ; even now she has scarce foothold.

“ Oh, could their ancient incas rise again,
How would they take up Israel’s taunting strain—
Art thou, too, fallen, Iberia? do we see
The robber and the murderer weak as we ?” &c.

But before I conclude this, I must beg you and my readers to forgive me if I trespass for a few lines. Early in this article occurs the name of one, the glory of his country, the pious, the kind-hearted, the undaunted Bishop of Chiassa, Bartolomé de Las Casas, one of the best men the world ever saw.

But there is one cloud on his fame, one dishonouring spot on the wreath that encircles his brow. This never ought to have been allowed to remain. I should not have remarked on this now, had not very recently Dr. Madden, and my friend Mr. E. Abdy, in his work on the United States, repeated the old charge,—I suppose on the authority of Robertson, who ought to have known better. What I allude to is the charge of his being the first to introduce negro slaves into the Western Indies. Herrera, the only *old* writer that I can find making the charge, sufficiently refutes himself. (Compare Decade 2, cap. 20, and cap. 8.) Other authors have followed Herrera, trusting to his usual accuracy. Not only is there no

proof that Las Casas was the first to propose the carrying negroes thither; but we have no proof that he ever sanctioned it directly or indirectly. Did not he give up his own *repartimiento* because he felt that no Christian could hold it with a clear conscience? And had he been so inconsistent after this as to sanction the slave-trade, would not some one of his enemies have cast this in his teeth? Enemies he had plenty; but it remained for the man who stole most of his decades from the manuscripts of Las Casas, to stand forth as his traducer. May we never hear more of this charge, so falsely brought against one whom we may truly call *justum et tenacem propositi virum*!

Sudbury, July 13, 1836.

ART. XIII.—*Notes on Diptera.* By FRANCIS WALKER.

MESSALA.

Messala Saundersii, *Curtis, Brit. Ent.* 581, is the same as *Bolitophila cinerea* (mas), *Hoff.*

DIXA. *Meigen.*

- D. æstivalis, Meigen.* Summer and autumn; near London; North Wales.
- D. aprilina, Meigen.* Autumn; near London; North Wales.
- D. maculata, Meigen.* Spring and autumn; near London; Wales; Devonshire; Scotland.
- D. nebulosa, Meigen.* Autumn; near London; Wales; Devonshire.

MACROCERA. *Meigen.*

- M. phalerata, Hoffmansegg.* Summer and autumn; near London; Ireland.
- M. angulata, Meigen.* Summer; near London; Scotland.
- M. centralis, Meigen.* Summer; near London.
- M. maculata, Meigen.* Summer; near London.

- M. lutea*, *Panzer*. Summer and autumn; near London; Windsor; Wales; Scotland.
M. stigma, *Curtis*. Summer; near London; Scotland.
M. fasciata, *Meigen*. Summer and autumn; near London; North Wales.
M. pusilla, *Meigen*. Autumn; near London; North Wales.
M. dorsalis, *Curtis*. Summer; near London.
M. multicincta, *Curtis*. Spring to autumn; near London; Wales; Hampshire.

PLATYURA. *Meigen*.

Div. A.

- P. marginata*, *Meigen*. May and June; Hampshire; Isle of Jersey.

Div. B.

- P. vitripennis*, *Meigen*. }
P. rufipes, *Hoffmansegg*? } May; near London.
P. flavipes, *Meigen*. May and June; lime and oak trees; near London; Hampshire.
P. laticornis, *Meigen*. June; near London; hovering about boleti.
P. discoloria, *Meigen*. June; lime and oak trees; near London; Hampshire.
P. fasciata, *Latreille*. June; near London; Hampshire.
P. servula, n. s. Mas. *Nigro-picea*, *subnitens*, *pubescens*:
antennæ piceæ: *coxæ et femora flava*; *tibiæ obscuriores*;
tarsi fuscæ: *alæ subfuscæ*, *immaculatæ*: *halteres flavi*,
apice fuscæ. (Corp. long. $1\frac{3}{4}$ lin.; alar. 3 lin.)
Found near London.

MYCETOBIA. *Meigen*.

- Mycetobia pallipes*, *Meigen*. June; on grass in woods; near London; Windsor Forest.

LEIA. *Meigen*.

- L. fascipennis*, *Megerle*. }
L. fasciola, *Meigen*. . . } Summer and autumn; on oak trees.
L. bimaculata, *Meigen*. Found near London.

- L. Winthemii, *Lehmann*. Spring and summer; on box trees; near London.
- L. flavicornis, L. fascipennis, and L. fasciola, of *Meigen*, seem varieties of one species.
- L. pubescens, n. s. (Div. B. b. *Meigen*). Mas. *Atra, obscura, albo-pubescens: antennæ nigræ; palpi flavi: pedes flavi; coxæ basi, femora subtus tarsique omnino fusca: alæ sublimpidæ, apice obscuriores; nervi fusci, ad costam bene determinati: halteres pallide flavi.* (Corp. long. $1\frac{1}{2}$ lin.; alar. 3 lin.)
- Found near London.

SEIOPHILA. *Hoffmansegg*.

- S. fimbriata, *Meigen*. June; near London; Windsor Forest.
- Var.?*—Abdomen black, shining: tip red.

September; North Wales.

- S. annulata, *Meigen*. } Spring and autumn; near London;
S. cingulata, *Meigen*. } North Wales.
- S. maculata, *Meigen*.
- S. marginata, *Megerle*. Common near London.
- S. ferruginea, *Meigen*.
- S. hirta, *Hoffmansegg*. September; near London; North Wales.
- S. vitripennis, *Meigen*. May and July; near London.
- S. lutea, *Macquart*. Found near London.
- S. nigra, *Macquart*. Spring and autumn; near London; North Wales.

Seiophila rufilatera, (Div. C. *Meigen*.) Fem. *Atra, antennæ nigro-fuscae, thoracis latera et abdominis segmenta apice rufa, pedes fulvi, alæ sublimpidæ.*

Atra, parum nitens, fere glabra: palpi pallidi: antennæ nigro-fuscae, basi rufæ: thoracis latera rufa: abdomen pubescens; segmenta apice rufa; pedes fulvi; tarsi obscuriores; coxæ rufæ; trochanteres fusci: alæ sublimpidæ; nervi et halteres fusci. (Corp. long. 2 lin.; alar. $3\frac{1}{2}$ lin.)

Found near London.

CORDYLA. *Meigen*.

- C. fasciata, *Meigen*. September; North Wales.

MYCETOPHILA. *Meigen.*

- M. biusta*, *Hoffmansegg*. September; near London; North Wales.
M. lunata, *Fabricius*. September; near London; Wales; Scotland; Ireland.
M. fuscicornis, *Meigen*. Spring and autumn; near London; Wales; Scotland.
M. arcuata, *Meigen*. Spring and autumn; near London; Wales.
M. lineola, *Meigen*. Spring and autumn; near London; Wales; Hampshire; &c.
M. luctuosa? *Meigen*. September; North Wales.
M. distigma? *Meigen*. August; near London.
M. punctata, *Meigen*. Spring to autumn; near London; Wales; Devonshire; Scotland.
M. lateralis, *Meigen*. Spring and autumn; near London.
M. fusca, *Meigen*. Spring and autumn; near London; North Wales.
M. semifusca, *Meigen*. Spring and autumn; near London.
M. discoidea, *Meigen*. Spring and autumn; near London; North Wales.
M. ornaticollis, *Meigen*. Spring to autumn; near London; Ireland; &c.
M. lugens, *Wiedemann*. Spring to autumn; near London; Wales.
M. nigra, *Meigen*. } Spring to autumn; near London; Wales;
M. nitida, *Meigen*. } Cumberland; &c.
M. crassicornis, *Stann.* }
M. domestica, *Meigen*. } September; near London; Ireland.
M. cingulata, *Meigen*. Autumn; near London; North Wales.
M. guttiventris, *Meigen*. June; near London; Hampshire.
M. leptura, *Meigen*. July; near London.
M. seriata, *Meigen*. September; North Wales.
M. pusilla, *Meigen*. Spring and autumn; near London; Wales; Scotland.
M. sciarina, *Meigen*. Spring and autumn; near London.
M. trivialis, *Meigen*. Found near London.
M. pallida, *Stann.* Spring and autumn; near London; North Wales.
M. intersecta, *Hoffmansegg*. Found near London.

- M. fenestralis*, *Hoffmansegg*. Spring and autumn; near London; North Wales.
- M. sericea*, *Macquart*. } September; near London; North
M. sericoma, *Meigen*. } Wales.
- M. nemoralis*, *Meigen*. Summer and autumn; in woods; near London; Wales.
- M. flavipes*, *Macquart*. Summer and autumn; in woods; near London; Wales; Cumberland; &c.
- M. pygmæa*, *Macquart*. Epping; near London.
- M. flava*, n. s. (Div. C. *Meigen*.) Mas et Fem. *Pallide flava: oculi picei: antennæ fusæ, basi flavæ: thoracis discus luteus: abdomen versus apicem fuscescens: tibiæ fulvæ: tarsi fusci: alæ flavo-limpidæ; nervi fulvi*. (Corp. long. $2\frac{1}{2}$ lin.; alar. $3\frac{1}{2}$ lin.)
 July; in woods; near London.
- M. ferruginea*, (Div. D. *Meigen*.) Mas et Fem. *Ferruginea, antennæ fusæ, thorax 3-vittatus, abdomen rufo-fuscum segmentis apice flavis, pedes flavi, tarsi fusci, alæ limpidæ*.
Pallide ferruginea: oculi nigri: palpi flavi: antennæ fusæ, capite thoraceque paullo breviores, basi flavæ: thoracis dorso vittæ 3 rufo-fusæ, quarum media anteposita et furcata; vitta quoque unica postica: abdomen rufo-fuscum; segmenta apice flava: coxæ et femora flava; tibiæ obscuriores; tarsi fusci: alæ limpidæ, vix fulvescentes; nervi fusci: halteres flavi. (Corp. long. $3\frac{1}{2}$ lin.; alar. 5 lin.)
 Found near London.

ART. XIV.—*Researches on the Insects injurious to the Vine, known to the Ancients and Moderns, and on the Means of preventing their Ravages.*

BY M. LE BARON WALKENAER.

[Extracted from the *Annales de la Société Entomologique de France*.]

INTRODUCTION.

General Considerations.—Division of the Researches into three Sections.

IN Europe, when, after a long succession of ages passed in the darkness of barbarism, the human mind began to resume its powers of advancement, its progress was everywhere the same, and it adopted a similar method in all the sciences.

Before the invention of printing we had no other sources of instruction than those furnished by the ancients. After this invention their works were more diffused and became better known. The admiration they excited, and the influence which they had acquired over the mind, was yet more increased by means of the invention of printing; and was, indeed, a necessary consequence of the abundance and perfection of their writings.

To expound and understand them well, and to classify the notions they exhibited, was everywhere the ambition of learned men. Every treatise, on whatever branch of human learning it might be, was a compilation, more or less methodical and complete, of what the ancients had written on the subject. To this was occasionally added what the moderns thought or had observed respecting it; but these additions did not carry the same weight and authority to the mind of the reader as the rest of the book; nor was it ever intended by the author that they should do so. But little account was made of any proposition or observation without the addition of *ut ait Aristoteles*, *ut ait Plinius*, *ut ait Hippocrates*, and other phrases of the like import.

It was fortunate for the progress of natural history, that the great number of new productions brought to Europe from newly discovered countries, toward the end of the fifteenth and at the beginning of the sixteenth centuries, soon convinced every one of the incompleteness of the writings of the ancients on the science.

It was then discovered that most of the objects which they had occasion to describe were absolutely unknown to them, and that they had very superficially observed and imperfectly described those with which they were acquainted. We most readily come to this conclusion in regard to the smallest animals; because the ignorance of the ancients on this point was greater than on almost any other, and the application of their notions respecting them to the uses of modern science is proportionably difficult and perplexing.

In the case of insects it was quickly ascertained that the ancients had only treated of a small number, and of these very incorrectly. When naturalists left off studying their writings, and gave themselves up to the study of nature exclusively, the science soon made rapid advances.

However, the names which the ancients gave to some classes

of insects, the meaning of which is easy to be understood, remain, because they have become part of languages now in use, derived from ancient ones: others, more obscure than these, the meaning of which was doubtful or unknown, were employed by naturalists for the numerous genera whose establishment the progress of modern science had rendered requisite. Naturalists seemed determined to make no new names until all those employed by the ancients were exhausted; and when at length this came to pass, with but one exception, (that of M. Adanson,) they always derived them from the Greek and Latin: and when they had given a name used in ancient writers to a new genus, it was hardly ever with the intention of applying it to the kind of insect these ancient authors had intended to allude to, and without any design of its assisting in any way to ascertain the species. It has been sometimes considered sufficient authority for giving an ancient name to a new genus, that that name formerly belonged to an insect (no matter what), or in some instances even if it could not be satisfactorily proved that the word had *not* been so applied.

Some names occur in our entomological catalogues whose meaning is so entirely lost, that it is very uncertain whether they belong to a plant or an animal. My purpose will be best served here if I illustrate this by an example, which is far from being the only one I could adduce.

M. Camus, the French translator of Aristotle's *Natural History of Animals*,^a well observes in his notes that commentators differ as to the meaning of the word *Staphylinus* employed by that writer. Some consider it the name of an insect, others the name of a plant; but, says Camus, relying on the authority of Valmont de Bomare's *Dictionary of Natural History*, where he found the word *staphylinus*, "The staphylinus is an insect well known to naturalists, because it has preserved its name both in French and Latin." We learn from these words that Camus did not know that the application of the word *staphylinus* to a genus of coleopterous insects, which is now subdivided into a great number of genera to which other names have been given, cannot be traced farther back than the time of Linnæus, who first made use of this

^a Camus, *Hist. Nat. des Animaux d'Aristote*, in 4to. t. ii. p. 783.

word in naming this genus without in the least intending that this signification should interfere with the meaning it might have in Aristotle, to whom indeed he does not allude.

In the instance of the higher animals, such as quadrupeds, birds, fishes, and reptiles, naturalists have established, as far as they could, a correct synonymy of those species known to the moderns which have been described in ancient writers, because they have there met with notices of some which have not been so well observed since, and others that are now altogether unknown; so that on this account they continue to be considered as portions of the science; but the case is very different with insects. In spite of the present imperfection of entomology, which is the most difficult of all branches of natural history, the moderns have made such progress that we may rest assured we have nothing to learn from the ancients on the subject; with the exception of the honey-bee and the caterpillar of *Bombyx mori*, or the silkworm, insects which perhaps occupy as important a situation and position in the history of the human race, commerce, and the arts, as any of the largest animals. Naturalists of the present day have paid but little attention to the study of ancient writers on the subject of insects; however, the names which they have borrowed from them show that they have read them, though, in some cases, perhaps without any other intention than that of establishing a connexion by means of a similarity of nomenclature between the writings of antiquity and their own; but they appear to have considered this kind of research as too difficult for them; or else that it was impossible to undertake it with any chance of success. This is why there are so few dissertations on the subject extant; and in those we do possess it very frequently happens that no attempt has been made to determine the species or genus, but only to discover the class to which the ancient name was intended to apply.

If the science of natural history has little to hope from these investigations, we may perhaps, however, obtain by their means a better and more exact interpretation of passages of ancient authors, and the difficulty attending such pursuits should not deter us from the attempt. In entering on this subject, as indeed when about to explore any of the uncultivated portions of the vast field of science, we may say, "If

this had been easy to do, it would hardly have been left undone."

These considerations have induced me to write and to submit to the Academy^b these researches, which I was led to make by a question put to me by one of our learned brethren on the subject of the interpretation of the name of an insect infesting the vine, mentioned by Plautus. The passage appeared so plain to me that I thought I could at once have given the meaning required. In order to satisfy myself that I was not mistaken, I examined what had been said by ancient and modern authors concerning the kinds of insects injurious to the vine, and on the means of destroying them. But, in unravelling the meaning of ancient passages, in comparing these, and afterwards in considering them in connexion with the observations of the moderns, I found greater difficulties than I had anticipated; to overcome these I used every effort—such was the origin of this memoir. The subject will doubtless appear trifling to some, but as it is alike interesting whether considered in connexion with the study of ancient learning, natural history, or agriculture, I cannot consider it as useless or unworthy of attention.

This memoir will be divided into three sections. The first, which may be considered as merely preparatory, will contain a critical examination of ancient passages in relation to the meaning of the names of insects which are mentioned therein as being particularly injurious to the vine.

In the second, I shall determine, by means of results obtained in the first, what are the species of insects injurious to the vine, known to the ancients and moderns, and shall point out the best means of preventing their attacks.

In the third section, a classified concordance of names; *i. e.* a synonymy of all the names which occur in these researches, will terminate the treatise, and render it of easy reference to those naturalists and agriculturists who may wish to consult it.

^b This paper was read at the Academy of Inscriptions, of which the author is a member, before it was communicated to the Entomological Society.

SECTION I.

CRITICAL EXAMINATION, ETC.

1. *Preliminary.*

This section being, as I have just observed, only preparatory in reference to the principal object of the memoir, no application of modern names to the interpretation of passages in ancient authors will be made in it. We shall content ourselves with examining the meaning of ancient words, with such assistance as a knowledge of the sense in which the ancients themselves employed them may afford us. The circumstances or peculiarities attending this use will, in the second section, enable us to interpret ancient names, *i. e.* to ascertain those in the language of naturalists with which they correspond, which are the only ones connected with definitions and descriptions sufficiently explicit to enable us to determine the objects intended. We shall only give a secondary consideration to popular names.

The names given in ancient, and often in modern, languages to objects, the differences between which would not attract the notice of superficial observers, were often of a general description, and common to many kinds, and therefore very vague. A single word was sometimes used for beings of a very different nature. Scholiasts, grammarians, and lexicographers, by their false distinctions, frequently added error to confusion, and occasionally the prodigious erudition of commentators still further perplexed the matter. It appears to us that the best way to acquire an exact and complete idea of the notions each of the names in question represents, will be to examine every passage in which they occur, and to endeavour to ascertain the various meanings which have been attached to these names when they have been employed in different significations. By this method we shall be enabled to found our opinions and conjectures with greater certainty on ancient passages; and we shall also be less exposed to the danger which so many, before they were aware, have fallen into, and some indeed knowingly, of selecting those passages only in the writings of the ancients which supported

their interpretations and systems, while they discarded all such as were opposed to them.

2. *List of the Names of Insects injurious to the Vine, mentioned by ancient Authors.*

All the vine-insects, or those mentioned in connexion with the vine, which I have been able to find in ancient authors, are the following:—

- | | |
|-------------------------------|---|
| 1. Thola, Tholea, or Tholaat. | 9. Joulos, or Julus. |
| 2. Gaza. | 10. Biurus, or Bythurus. |
| 3. Ips. | 11. Involvolus, Involvulus,
or Involvus. |
| 4. Iks. | 12. Convolvulus. |
| 5. Spondyle, or Sphondyle. | 13. Volvox. |
| 6. Cantharis. | 14. Voluera. |
| 7. Phteïre, or Phteïra. | 15. Eruca. |
| 8. Kampé. | |

3. *List of Authorities in which these Names occur, and which consequently will have to be alluded to in this Dissertation.*

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|---------------|-----------------|---------------------|
| The Bible. | Strabo. | Palladius. |
| Homer. | Pliny. | Herodian (the Gram- |
| Ctesias. | Columella. | marian). |
| Alcman. | Athenæus. | Festus. |
| Aristotle. | Origen. | Suidas. |
| Theophrastus. | St. Chrysostom. | Hesychius. |
| Plautus. | St. Epiphanius. | Eustathius. |
| Cato. | Ammonius. | Philus. |
| Cicero. | | |

4. *Thola, or Tholea, or Tholaath.*

This is a Hebrew word: it occurs in Deuteronomy; where the animal which it designates is mentioned among the judgments the Israelites are threatened with if they transgress the law of God.^c The verse in which it occurs is rendered as under, in the translation made from the Greek and Hebrew texts by the pastors and professors of the church of Geneva:^d—
“Thou shalt plant vines and dress them, but thou shalt not

^c Deuteronomie, xxviii. 29.—? 39, Translator.

^d *La Sainte Bible, ou le Vieux et le Nouveau Testament*, traduit par les Pasteurs et les Professeurs de l'Eglise de Genève.—Genève, 1805, l. i. p. 276.

drink of the wine, nor gather the *fruit* thereof, for the worm shall eat it."

Sacy, translating from the Vulgate, has:—

"Thou shalt plant the vine and dress it, but thou shalt not drink the wine thereof, neither gather any thing therefrom, because it shall be destroyed by worms."

Respecting the first of these versions, we may remark, that the word "*fruit*" is printed in italics because there is no such word in the Hebrew, and, indeed, there was no necessity for its insertion. The sense does not require it, it is complete without the word; and it is, moreover, liable to mislead; for the insects which injure the vine by wounding the roots are not the same that eat the leaves, and these again differ from such as consume the fruit.

The word *tholath* in the interlined version of the Hebrew Bible of Arius Montanus,^e is also translated by *worms* (*vermis*). But the Hebrews had also another word for worm—*rimma*. This word is often employed in the Bible in a figurative sense, in the same way that *thola* is—for an unclean creature, or an animal which is engendered in corruption.

In this sense the word *rimma* occurs frequently in Job; it occurs also in Exod. xvi. 24; in Hosea xiv. 11.

The word *tholaat* is also used in Job xxiii. 6; in Exod. xvi. 20; in the passage in Deuteronomy we have quoted; in Psalm xxii. 17; and in the book of Jonah, iv. 7.

But it will be necessary for our purpose to quote the whole of this passage, and to demonstrate the correctness of the translation we shall ourselves make of it, which differs from that of the Geneva professors, and also from Sacy's version from the Vulgate. It is said that the prophet, having gone out of the city, stopped on the eastern side of it, and built himself a booth.

"Then," says the prophet, "God created a plant (*kikajon*), which grew higher than Jonah, and formed a shade over his head, and this caused Jonah exceedingly to rejoice; but the next day, very early in the morning, God brought a worm (*tholaat*), which injured the plant (*kikajon*), and made it wither."

It will be easy for me to show that I have good reasons for thus translating the passage, and rejecting the three versions before me.

^e Bible d'Arias Montanus.

The Hebrew word which I have rendered by plant is *kikajon*, and the sense of the phrase shews that it must have been a plant large enough to have foliage affording shade. But what was this plant? No one knows. The Septuagint make it a gourd; St. Jerome translates the word ivy; but St. Augustine, in a letter to that father, informs us this change had offended some of the African brethren, who had compelled their bishop to withdraw the word from the translation of St. Jerome; Sacy, though he retains the ivy of St. Jerome's version because it is in the Vulgate, is disposed to think it was a vine or fig-tree. The pastors of Geneva and M. Gesenius^f make *kikajon* a *palma Christi*, and Bochart^g appears to agree with them in this view of the matter, though he does not, so it seems to us, succeed in showing its soundness, for the texts he adduces in its support are precisely those which furnish the best reasons for adopting a contrary opinion.

But if we determine beforehand the plant mentioned in this passage of Jonah, we decide also what kind of insect would be likely to destroy it, and we are in danger of giving to the word *tholaat* a different meaning to what it really has. The chances of error are still greater if we translate with Sacy, "it pierced the ivy by the root;" a fact of which no mention is made, either in the Hebrew text, or in that of the Vulgate. If we adopt this version we are in danger of drawing conclusions from false premises, which will be so much the more erroneous in proportion as they shall have been regularly and critically deduced. I am, therefore, justified in altering the translation of the passage so as not to leave any word in it which does not occur in the original.

From all that has been said, it results that the words *rimma* and *thola*, or *tholaath*, have been often used in the Bible indifferently, one for the other, in the sense of worm, or grub, an animal produced in corruption, vile and contemptible, but with this difference, that twice the word *thola*, or *tholaat*, is employed to designate a worm that eats a plant. In the first of these passages the plant is the vine, in the second the kind of plant is not known; but, however, we are sure it is a plant; and we know that such an animal as there alluded to, though it may have the form of a worm, cannot be

^f Gesenius, *Handbuch*, &c., 1828, in Svo. p. 883.

^g Bocharti, *Hierozaicon*, tom. ii. p. 623.

a worm properly so called; we are certain it must be a grub, or a small insect, or the larva of an insect undergoing a metamorphosis. The word *rinná* is never employed in this latter sense, at least in the Bible. It would seem, therefore, that in this respect the Hebrew language is richer than our own, since, in common parlance, we have only one word to designate the worm of the nut, of the pear, of the apple, and of all other fruit, and the earth-worm, though these animals are not only not of the same genus, but belong to very different orders.^h

*

5. *Gaza*.

Gaza is also a Hebrew word: it is used in the Bible in one place to designate an insect injurious to the vine in particular, but afterwards for an insect destructive to all kinds of plants, in connexion with many other insects, the names of which have occasioned a vast number of dissertations, some of which would fill volumes. We too have examined the modern names which might correspond with the ancient names of insects mentioned with the word *gaza* in the Bible, and shall, perhaps, treat of them in another paper. Here we must confine ourselves to that which concerns the word *gaza*, because it is the only one of these names which is employed for an insect particularly injurious to the vine, and we shall only occupy ourselves with the other names of insects which are mentioned in connexion with the word *gaza*, as far as they may assist us in interpreting it correctly. But the diversities of opinion among translators has been so great, that it will be needful, in order to obtain clear ideas on the subject, to give the passages as we have translated them, without altering the Hebrew names.

We find the following passage, in which *gaza* is used for the name of an insect destructive of the vine, in Amos iv. 9:—
“ I have smitten you with the searching wind and mildew. *Gaza* has devastated your gardens, and all your vines and your fig and olive trees, and you have not returned to me, saith the Lord.”

^h *Vid.* Cuv. *Règne Animal*, tom. iii. p. 180, sur la troisième grand division des animaux articulés où ce naturaliste établit que les vers, autrement dit Annélides, doivent marcher en tête de cette division et avant les Crustacées, les Arachnides et les Insectes.

The word *gaza* occurs in Joel ii. 25:—"I will restore to you the fruits of the year, and all that *arbeh*, *jelek*, *chazil*, and *gaza*, that devouring multitude which I sent against you, have destroyed."

But the passage in Joel in which *gaza* occurs, that is most important to the interpretation of the word, is in chap. i. ver. 4:—"What *gaza* leaves *arbeh* eats; that which *arbeh* leaves *jelek* eats; and what *jelek* leaves *chazil* eats."

In these different passages, the Septuagint translates *gaza* by *kampè*, and the Vulgate by *eruca*, *i. e.* a caterpillar. The pastors of Geneva, and Sacy, have adopted this latter translation. Bochart and Michaelis agree with them in opinion.¹ But the Chaldean version employs the word *gaza* to designate a kind of wingless locust; and in the book of the Prophets alone, the Talmud enumerates ten species of locusts, among which *gaza* is included.

The three other insects mentioned in Joel in the same verse with *gaza*, *i. e.* *arbeh*, *jelek*, and *chazil*, are also included among the ten species enumerated by the Hebrew doctors in the Talmud. The interpreters of the Bible differ as to the signification of the words *jelek* and *chazil*, but they all agree on the meaning of the word *gaza*. There is no doubt that it was intended for a locust. The Chaldean version agrees with the Septuagint and Vulgate in all the passages where the word is found in the Bible. *Arbeh* is the first of four kinds of insects, or crawling creatures, pointed out by Moses as fit for food; and Forskael tells us that the Arabs still give the name of *arbeh* to a kind of locust they eat in their country. Now we learn from Joel, that what *gaza* leaves the *arbeh* eats, and we may safely conclude that *gaza* was the name of an insect eminently destructive, not only to the vine, but to all kinds of plants; and that to its ravages succeeded the attacks of many kinds of locusts, who finished the work of destruction, and completely consumed every thing this formidable insect had not devoured. Some learned interpreters have considered this insect to be a caterpillar; others, of equal authority, have concluded that it was a kind of wingless locust. We will endeavour to ascertain the true meaning hereafter, but at present, adhering to our proposed plan, as we have now examined all that the Hebrews have handed down to us respecting the insects

¹ Bochart, *Hierozoicon*, part ii. p. 483.

injurious to the vine, we will turn to what the Greeks have said on the subject.

6. *Ips*.—*Iks*.

I have placed these two words together, because, as we shall see, they cannot be separated in this discussion.

The word *ips* occurs in ancient authors as the name of an insect injurious to the vine in particular; but it is also employed by Homer, St. Chrysostom, and the lexicographers and grammarians of the middle ages, to designate an insect which eats horn; and in neither of these acceptations can it be a worm, properly so called, which is named otherwise in Greek.

We will first consider the *ips* mentioned in Homer; it is in the Odyssey, b. xxi. v. 295. They have given Ulysses, while as yet he is unknown to his friends, his formidable bow. The poet says:—"The hero took the bow, examined it attentively, and bent it in every direction, fearful lest the horn should have been eaten by the *ips* in the absence of the master."

If we wish to know what kind of horn Homer's *ips* attacked, we have only to find out the animal whose horns were used in the time of Homer to make bows of the best description, such as would be suitable for the use of a king like Ulysses. On this point Homer himself gives us information. In the Iliad, b. iv. v. 105, *et seq.* we are told that the bow of the divine Pindar was made of the horns of the *aigos*, or *ægagre*, or wild goat; that these horns were sixteen hands in length; and that a skilful workman, after having polished and joined them carefully, had gilded their extremities.

The horns of the *ægagre* are frequently three feet and a half long; they bend naturally, and if united as Homer mentions, would form a bow of the size alluded to.

The *ægagre*, or wild goat, is found, though very rarely, in the mountains of western Europe: one was killed during my stay among the Pyrennees, and I saw horns of this animal which measured two feet and a half: it is, however, very common in the East. In Persia it is called *paseng*. Burckhardt tells us that the Arabs of Syria give it the name of *bidin* (*beden*): that traveller also informs us they have been seen in troops of forty or fifty in that country. Their flesh is in high esteem, and they are also sought for their horns,

which are taken to Jerusalem, where they are used for making knife and poniard handles. Burekhardt^k saw a pair three feet and a half in length. Thus the *ips* of Homer may be known and dreaded by the warriors of that country.

But this meaning of the word *ips* disappears, or is at least somewhat altered, in the Greek authors after Homer, whose works have come down to us; and in Strabo, Theophrastus, and the writings of learned agriculturists, passages from which we shall give presently, the word *ips* is always used for an insect or a worm injurious to the vine, and consequently for a larva, the food of which is plants, and not horn.

However, we again find the word with the Homeric signification in a remarkable passage of St. Chrysostom, which I shall translate:—"The injurious effects produced by copper on the body, by rust on iron, by the moth on wool, and by the *ipes* on horn, vice produces on the soul."^l

However, I maintain that the *ipes* mentioned in the best Greek authors, *i. e.* by those whose writings are of the highest authority, is an insect which eats the vine.

Strabo says:^m—"The Erythreans gave Hercules the name Ipocitone, *i. e.* the destroyer of the *ipes*, as those insects are called that injure the vine."

Theophrastus,ⁿ after having told us how the worms come in wheat, adds, that the *ipes* are produced by a south wind, and farther on he says, "There are, however, some places where the vine is not infested by them; [such as open, exposed, and dry situations."

We read in the Geoponicks:^o "To prevent the little worms

^k Burekhardt, *Travels in Syria and the Holy Land*, 1822, p. 405; Fisch., *Synopsis Animal*, p. 483; Cuvier, *Règne Animal*, 2d edit., tom i. p. 275.

^l Sanct. J. Chrysost. ap. tom. iv, p. 669, E. St. Chrysostom uses the word *scolex* for the worm which eats wood. In the grammarians of the lower ages, *scolex* is used for the earth-worm (which is the worm properly so called); *scolex* signifies also, according to the same grammarians, the worm that infests the ox, which is quite another animal, either an intestinal worm, or the larva of an insect. St. Chrysostom's *scolex*, or wood-eating worm, must be the larva of an insect, and Aristotle employs the word in this sense, since he says, every insect comes from a *scolex*.

^m Strab. edit. *Almenoven*, in folio, liv. xiii. p. 613 au 912, de la traduction Franc. tom. iv. p. 213.

ⁿ Theoph. *de Caus. Plant.* liv. iii. c. 22, (ou 23 de l'ed. de Schneider, tom. ii. p. 299). Scaliger translates *ips* by *convolutus*; why he does so we shall see hereafter.

^o *Geoponicus*, edit. Niklas, c. 53, v. 423.

called *ipas* attacking the vine, it is necessary to smoke the reeds that are used for props, because by decaying in the ground these produce little worms which crawl up the vine."

Galien, cited by Aldrovandus, informs us that black mould destroys the *ipes*.

In the Dictionary of Suidas^p we find the word *ipi* defined by worm, with the addition that it would be better to say *ips*. This work gives the same meaning for that word.

But the name *ips*, with a little alteration in the form of the word, or another insect with a slightly different name, is mentioned by various authors as being very injurious to the vine.

In a fragment of Alcman, quoted by Bochart,^q it is said, "the speckled *ika* is the pest of the shoots of the vine."

The grammarian Ammonius also, in his treatise on Synonyms,^r says, "The *ikes* are animalcules which eat the shoots of the vine."

Bochart thinks *ips* and *iks* the same words in different dialects.

Valckenaer, in his Notes on Ammonius, is of the same opinion. "*Ego verisimilam censeo* (says this clever critic) *Sam. Bocharti sententiam qui ab Alcman ika, ex dialecto pro ipa positum sagaciter animadvertit et ex idoneis auctoribus loca produxis in quibus, qui in vitibus nascuntur vermiculi ipes dicuntur.*" Valckenaer concludes with Bochart that *ips* is the most ancient form of the word.

However, in Hesychius, and an anonymous grammarian cited by M. Boissonade, the two words are distinct, and are used for different insects.

The Dictionary of Hesychius gives the word *iks* as the name of an animalcule (*theridion*) injurious to the vine; and in the same work the word *ips* occurs again with this explanation, that it is employed by grammarians to designate an insect which eats horn.

According to the anonymous grammarian quoted by M. Boissonade in the Notes to his *editio princeps* of Herodian,^s

^p *Suid. Lex.*, éd. de Kust. 1705, in folio, tom. ii. p. 141.

^q *Boch. Hironicon*, tom. ii. p. 213.

^r *Am. tit. ii. c. 5*, de differentia adfinium vocabulorum, nunc primum edit. opæ MSS. Primæ edit. Aldinæ. Vulgavit Valck. pp. 73, 74.

^s *Herod. Partit.* Lond. 1819, in 8vo. p. 58.

who gives the names applied to various insects from the substances they inhabit, or are destructive to, *iks* is the worm of the vine, and *ips* the worm feeding on flesh and horn.

Are we now in possession of sufficient information to enable us to distinguish these two species of insects, and shall we call them by different names? Or is the distinction alluded to one falsely established by grammarians and lexicographers, who out of one word, with some slight alteration, have uselessly made two different words? We have, however, nothing to do with these inquiries at present, we must here confine ourselves to collecting those facts which a critical examination of the passages may afford us, without any anticipatory view of the conclusions we may have to deduce therefrom: these will come afterwards. We may now conclude from all that has been said:—

First, That by the most learned ancient authors who have treated *ex professo* of agriculture, natural history, and geography, the word *ips* is only used for the larva of an insect injurious to the vine:

Secondly, That in Homer, St. Chrysostom, and the lexicographers and grammarians, who lived during the decline, the word *ips* is exclusively employed to designate the larva of an insect which eats horn:

Thirdly, That the word *iks*, whether different from *ips*, or the same word in another dialect, was applied by Alcman, and the lexicographers and grammarians of the lower ages, exclusively to an insect injurious to the vine, the shoots of which it eats.

7. *Spondylus*, or *Sphondylus*.

Aristotle, in his Natural History of Animals,[†] after having described the way in which flies and beetles copulate, adds, the *spondylus* (or *sphondylus*) the *phalangia*, and other insects, copulate in the same manner.

I have said *spondylus* or *sphondylus*, because the editors and translators of Aristotle's work are divided on the word. M. Schneider has written in the Greek text *spondylai*, and M. Camus *sphondylai*: both make it an insect, because here

[†] Arist. *Hist. An.* lib. v. c. 7, éd. Schneider, tom. ii. p. 181 de la traduction, et tom. i. p. 190, du grec, et liv. v. c. 8, tom. i. p. 219, de la traduction de Le Camus.

the meaning of the word is very evident: but in another passage of the same work,^u Aristotle, speaking of the diseases of the horse, mentions a case in which that animal drags his leg, and says, "he is affected in the same way if he eats the *staphylinus*." The *staphylinus* is like, and as large as, the *sphondylus*.

M. Camus, in his translation, still writes *sphondylus*, and so does Hesychius, who considers the *staphylinus*, and consequently the *spondylus*, to be an animal. M. Schneider, on the contrary, who this time also writes *sphondylus*, thinks that the word is entirely different from *spondylus*, the name of an animal in the first passage I have quoted. M. Schneider, adopting Scaliger's opinion, makes the *staphylinus* a plant (the parsnip), and consequently considers that the *spondylus* mentioned in the latter passage was also a plant.^x

M. Schneider, in his note, does not attempt to show the correctness of his translation, but is satisfied with citing Scaliger's opinion in its support. I must confess I here incline to agree in opinion with Le Camus. But what advantage are we to expect to gain by the discussion? What matter is it whether the name of the insect thus twice mentioned by Aristotle is *spondylus* or *sphondylus*, since he does not in either passage give us any information about it? In the second it is true he compares it to the *staphylinus*, but we know as little of the *staphylinus* as we do of the *spondylus*; and in neither passage is there any mention made of the vine. We should have had no occasion to allude to the *spondylus* if the word had only occurred in Aristotle; but Pliny,^y speaking of the *birthwort* and the wild vine (*vitis sylvestris*), which lives for a year in shady places, makes the remark, that no animal touches the roots of these plants, or of any other plant he has mentioned, except the *spondylus*, a kind of serpent, which attacks all. "*Et Aristolochia ac vitis sylvestris anno in umbra servantur: et animalium quidem exterorum nullum aliud radices a nobis dictas attingit excepta spondyle quæ omnes persequitur. Genus id serpentis est.*"

Schneider, after quoting this passage, adds, *Ineptè ut solet*.

^u Arist. lib. viii. c. 24; Schn. tom. iii. p. 276.

^x Sch. Arist. des Anim. Hist. tom. iv. p. 665.

^y Plin. Hist. Nat. lib. xxvii. sec. 118, c. 13; tom. viii. p. 106, de l'édit. de Franz.

Pliny had the genius to conceive, and the talent to execute, an abridged encyclopedia of human knowledge: we may, perhaps, even say that he has produced the most learned book that was ever written; and it is perfectly unallowable to speak of a writer of such merit with the rudeness and contempt which the learned German has shown on the present occasion. Pliny, however, is not altogether undeserving of censure; he has borrowed largely from Aristotle's Natural History of Animals, and in so doing he is not content merely to translate, but often perplexes, by useless or pompously obscure phrases, subjects which Aristotle has explained with precision and clearness, and mixes up with his (Aristotle's) matter, vulgar and silly stories, or vague and erroneous notions.

However, it would certainly have been better if Mr. Schneider, who unites the knowledge of a naturalist with the learning of the philosopher, instead of allowing himself to give vent to such a sally on the subject of the passage in Pliny we have quoted, had endeavoured to obtain what information he could therefrom, as he would have seen that this very passage (of which he speaks so disrespectfully,) enables us to ascertain the species of insect named *spondylus* in the first passage of Aristotle, and perhaps also of that named in the second. In fine, as we are very certain that no serpent, at least in Europe, is injurious to the roots of plants, we infer from comparing the two passages (of Pliny and Aristotle):—

First, That the larva of an insect named *spondylus* by the Greeks, was known to the Romans, and that it ate the roots of all kinds of plants;

Secondly, That this larva was very large, since it is compared to a little serpent;

We shall presently see the conclusions we shall obtain from these results.

We shall, perhaps, be told that we might have spared ourselves this long discussion on the word *spondylus*, since Pliny has only spoken of it in connexion with the wild vine, *vitis silvestris*, which is not a vine, and has nothing to do with the plant that bears grapes; but it is, as Pliny himself tells us, an annual, like *birthwort*. I reply, that the vine is included amongst the plants Pliny has spoken of, and which, he says,

are all obnoxious to the attacks of the *spondylus*; and that what concerns this insect is directly connected with our subject.

8. *Cantharis*.

In the *Geoponicks*, c. 49, a receipt is given to prevent the injuries of the *cantharides*: it is to macerate these insects in oil, and to rub the vine with the decoction.

Palladius also has a receipt to be used against the insects that infest the vine; he directs the *cantharides* which are found on the rose to be macerated in oil till it acquires an unctuous consistence, and the vines they intended to be pruned, to be rubbed with this liniment.²

The name *cantharis* frequently occurs in many Greek and Latin authors; but without any mention of the vine being made at the same time. In Pliny we read, however,^a "*Ver-rucas cantharides cum uva taminia intritæ exedunt*:" "*Cantharides*, pounded and mixed with the *uva taminia*, destroy warts."

What *uva taminia* was is not now known; it has been translated wild grapes, but it certainly was not the fruit of the vine.

It would be superfluous to adduce here the numerous passages in the works of ancient authors, in which the word *kantharis* occurs, because the signification of this word is well known. It is evident, from all these passages, that they intended the perfect insects, and not their larvæ, by this word; that they belonged to the order *Coleoptera*, or beetles; that *cantharis* was a general term for different species of beetles, though not for all kinds indifferently. The ancients always used this word to designate certain species of *Coleoptera*, or beetles with brilliant colours, which were remarkable for their blistering or poisonous properties, differing considerably, however, as to the particular species intended.

Thus the *cantharis* of Aristotle appears to be the same species as that mentioned by Aristophanes;^b but it is a very different insect to the one with black and yellow bands, which Dioscorides has described so well that it is impossible for natu-

² Palladius, lib. i. c. 35; tom. i. p. 48, ed. Biponti. ^a Plin. lib. xxx. c. 9.

^b Aristophane cité dans Aldrovandes, *de Insect*, c. 3, tom. i. p. 180.

ralists to mistake it; it is to this latter insect we must refer the winged *cantharide*, of a pale red colour, to which, on account of its virulent and deadly poison, Epiphanius likens heresy.^c The *cantharide* of Origen,^d which is produced from a larva subsisting on the flesh of the ass, is still different from those of St. Epiphany, Dioscorides, Aristotle, and Aristophanes; though probably most nearly allied to the last mentioned.

Pliny mentions various kinds of *cantharis*,^e but it is not easy, for want of a proper description, to make them out; when, however, he says (lib. xviii. chap. 44)—“Est et *cantharis* dictus scarabæus parvus frumenta erodens,”^f we immediately recognise the little formidable beetle to which, in this place, he gives the name *cantharis*. Theophrastus, who has also spoken of this little insect, which breeds in wheat, gives it the same name.

From all that has been just said, it results, that in order to find the insect to which the name *cantharis* was applied, considered by the ancients as injurious to the vine, we must look among perfect insects in the class *Coleoptera*; amongst such as have brilliant colours, or are known for their venomous or vesicatory properties; but which are as likely to be of large as small size.

9. *Kampus* and *Phteirus*.

I here bring these words together, though they have very different meanings, because they occur together in a passage of the *Geoponicks*,^g the only one in which the first is mentioned in connexion with the vine. The author gives a receipt in use in Africa for protecting the vine from the *phteirus* and *kampus* which breed on it. Ctesias also mentions the *phteiri* as being destructive to the vine in Greece.^h

^c S. Epiph. *Pan. rom.* p. 1067, ed. Petaz.

^d Orig. *Cont. Cels.* lib. iv. c. 57, p. 549, et ed. Delarue.

^e Plin. *Nat. Hist.* liv. xxix. c. 30; tom. iii. p. 107, de l'édit. de Miller.

^f Plin. *Hist. Nat.* c. 44, ou 17; tom. vi. p. 138, de l'édit. Franzius.

^g *Geoponic.* edit. Niklas, cap. 30; tom. iii. p. 485.

^h Ctesias *Indicor.* cap. 21, p. 253, edit. Baëhr. Francof. 1824, in 8vo.

10. *Kampe*.

Aristotleⁱ was well acquainted with the metamorphosis of the butterfly, the larva of which he calls *kampe*, and he makes particular mention of the caterpillar of the cabbage.

Theophrastus,^k in his History of Plants, uses the word *kampe* for an animal which eats the leaves and flowers of all kinds of trees.

Pliny,^l abridging this passage of Theophrastus, translates *kampe* by *eruca*, the caterpillar.

We have already seen that the word *kampe* occurs three times in the Septuagint (Greek) version of the Bible; twice in Joel, and once in Amos;^m and in the Latin translation of the same passages in the Vulgate, the word *eruca* always corresponds with *kampe*, although it is by no means certain, as we have already remarked, that these are considered synonymous with the Hebrew word *gaza*, of which they are the interpretation.

St. Chrysostom, in a remarkable passage, speaks of the *kampas* as having been an object of religious worship in pagan times,ⁿ and the word is correctly rendered by *erucas*, caterpillars, in the Latin translation. In the Dialogues of Pope Gregory the Great,^o mention is made of one Boniface, Bishop of Ferentum, who went into a garden filled with caterpillars:—"Ingressus portum, magnâ hunc *erucarum* multitudine invenit esse coopertum."

Pope Zachary, in translating these Dialogues into Greek, renders *erucas* by *kampes*.

But the following passage of Columella sets the matter completely at rest:^p—"Animalia quæ a nobis appellantur *erucæ* Græcè autem ΚΑΜΠΑΙ nominantur:" "The animals that we (the Romans) name *erucæ* are called in Greek *kampai*."

Palladius and Columella, though writing in Latin, have

ⁱ Aris. *de Anim.* liv. v. c. 19.

^k Theophrastes, liv. iv. c. 16.

^l Pline, liv. xii. c. 24.

^m Joel i. 4; *Ibid.* ii. 25; Amos iv. 29.

ⁿ S. Joannes Chrysostom, *Homel.* 2, in *Acta Apostol.*; tom. iv. p. 621, liv. xiv. edit. Eton, 1612, in fol.

^o S. Gregor. *Dialogorum libri*, 4, lib. i. cap. 9; tom. ii. p. 396, edit. de Paris, 1675, in folio.

^p Columella, lib. xi. cap. 3.

often used the Greek word in preference, when they have had occasion to speak of the caterpillar.

Palladius, speaking of a method of destroying the insects that infest the vine and pot-herbs, for which purpose he recommends that the stalks of garlic should be burnt in the gardens, and that the knives used in pruning the vine should be rubbed with garlic, says:—"Campas fertur evincere qui fusticulos allii sine capitibus per horti omne spatium comburens, nidorum locis pluribus excitavit. Si contra easdem vitibus voluerimus consulere. Allio trito falces putatoriæ feruntur unguendæ."^a

Columella, having occasion to speak of the devastations committed by the caterpillar, twice makes use of the word *campe*:—

"Nec solum teneras audent erodere frondes
Implicitus conchæ limax, hirsutaque *campe*."^r

And afterwards—

"Non alitur quam decussa pluit arbora nimbus
Vel teretes mali, vel tectæ cortice glandis,
Volvitur ad terram distorto corpore *campe*."

It is, therefore, clearly shown, that it is among caterpillars, or the larvæ of *Lepidoptera*, or butterflies, that we must look for the *kampes* which, according to the Geoponicks, breed in and are injurious to the vine.

11. *Phteire*.

We know that this Greek word was applied to an insect parasitical on man—the louse; but it is questionable whether Ctesias,^t and the author of the Geoponicks, intended to indicate by this word all kinds of vermin injurious to the vine, including the *kampes*, or caterpillars, or one insect in particular, which was very small, and was, by reason of its diminutive size, considered by husbandmen as the louse of the vine. This we shall have to examine.

^a Palladius, dans les *Scriptores de Re Rustica*, edit. Biponti, tom. i. p. 43.

^r Columell. *de Cultu Hort.* vers. 324, tom. i. p. 410, edit. Biponti, 1787, in 8vo.

^s Columell. *de Cultu Hort.* liv. x. vers. 366. Gesner dans son Dictionnaire, cite aussi Sextus Empiricus, tom. xiv. au sujet du mot *Campe*.

^t Ctesias *Indicorum*, cap. 21, p. 253, ed. Boëhr. Francof. 1824, in 8vo.

12. *Julos*, or *Julus*.

Suidas, an author of the ninth or tenth century, says in his Dictionary,^u that *julos* is the worm of the vine; that it has many feet; and is also called *multipede*, and that it rolls up and breeds in moist earth.

On this sole authority, the most learned lexicographers have not hesitated to make *julos* synonymous with *ips*, *iki*, and *convolvulus*, and every other insect mentioned in ancient writers as injurious to the vine. We shall soon have an opportunity of seeing what a number of errors this arrangement has caused, for which no authority can be found in any ancient manuscript. No ancient author has made mention of *julos* in connexion with the vine, or as injurious to it. The Romans employed the word *julus*, or *julius*, in many instances, with the same meanings as the Greeks; but never, as far as I know, applied the name to a worm, or an insect, or, indeed, to any animal.

Aristotle, in his History of Animals,^x mentions the *julios*; but all that he says about it is, that it is an insect without wings, like the scolopendra. In speaking of animals in general, Aristotle distinguishes those with four legs from those that have a greater number;^y and he includes the scolopendra and the bee in the latter division. It is easy to see that Aristotle intended by these two examples to give the two extremes; one, an animal with six legs, two more than quadrupeds possess, the other, an animal with a much greater number. However, a scholiast on Aristotle, forming, like the dictionary-makers, his opinion from the connexion, makes a wasp of this scolopendra—(an insect without wings a wasp!) Aristotle makes mention of the marine scolopendra,^z an animal differing from the one above alluded to, which lives in the sea. He gives a description of it, and tells us it is like the land scolopendra, but redder; that its legs are slenderer and more

^u Suidas, *Lexicon*, tom. ii. p. 126, edit. Francof.

^x Arist. *Hist. Anim.* lib. iv. c. 1; tom. i. p. 129, du texte grecque; et tom. ii. p. 126, de la traduction latine dans l'éd. de Schneider; tom. i. p. 171, de la traduction de Le Camus.

^y Arist. liv. i. c. 5; tom. ii. p. 16, de la traduction de Lecamus.

^z Arist. liv. ii. c. 4.

numerous. Concerning the land species,^a he remarks that, if cut into many pieces, each has a forward motion.

Pliny,^b translating this passage of Aristotle on the marine scolopendra, says that it resembles the centipede; and in another part of his work^c he thus defines the centipede:—"The millipede, which is called also centipede, or multipede, is a kind of earth-worm, which uses all its feet, and describes the arc of a circle in walking, and which rolls itself up at the least touch. The Greeks name it *oniskon*, and sometimes *tylon*." Farther on, he says, that kind of centipede, which some Greek writers give the name seps, and others scolopendra, is very poisonous:—"Millipeda, ab aliis centipeda aut multipeda dicta, animal e vermibus terræ pilosum, multis pedibus arcuatim repens, tactuque contrahens: se *oniskon* Græci vocant, alii *tylon*. . . . Illam (centipedem) autem quæ non arcuatur *sepa* Græci vocant, alii scolopendrem minorem perniciosumque." I may remark here, that Pliny, in this place, confounds the *julios* with another species of millipede, which Aristotle^d has mentioned by the name of the polypede of the ass, *onos a polupos*. Pliny appears afterwards to give the name of seps and scolopendra to the onisci, and says they are smaller than the centipede, and that they do not describe curves in walking. But errors of this kind are common in this author.

Numenius, quoted by Atheneus, calls the *julios* the entrails of the earth.

Eustathius, in commenting on this passage, and Théon, a very old author, give different reasons for the expression.

Hesychius says, the *joulos* is like the polypede; that it inhabits moist earth, and differs from the onus, or asellus.

Lycophron applies the epithet *juliopezos* to a many-oared ship.

From all these passages, we may infer, that the *julos*, or *julus*, was an apterous or wingless insect, with a great number of legs, which rolled up at the touch; which described curves or sinuosities in walking; concealed itself in the ground; is

^a Arist. *Hist. Anim.* liv. iv. c. 7.

^b Plin. *Hist. Nat.* liv. ix. c. 43.

^c Plin. *Hist. Nat.* liv. xxix. c. 6; tom. x. p. 128.

^d Plin. *Hist. Nat.* liv. xxix. c. 39; tom. viii. p. 273; Arist. *Hist. Anim.* tom. v. c. 25 (vulgo 31); Scaliger, 126, tom. ii. p. 224, edit. Schneider.

found in damp situations; and finally, that Suidas alone has said that this insect is injurious to the vine.

13. *Biurus*.

We now come to the names of insects injurious to the vine in use among the Romans, and the first is a word that, by its etymology, would appear to be derived from the Greek.

The name *biurus*, used by Cicero for an insect injurious to the vine, is only known to us by a passage of the naturalist Pliny. That ancient writer, speaking of divers medical prescriptions, and some singularities relating to the natural history of animals, ends a chapter with these words:—"Marcus Cicero says, there are insects called *biuri*, which eat the vines in Campania:" "M. Cicero tradit animalia *biuros* vocari qui vites in Campania erodant."

It has been well remarked, that this word is derived from the Greek *oura*, and appears to be synonymous with *bicaudes*, an insect with two tails.

It is necessary to pay attention to this etymology, which furnishes us with the only particular which can enable us to recognise this insect. The most ancient manuscripts read *biuros*, and we must therefore reject the reading, *byturos*, which certain of Pliny's editors have adopted, whilst they have neglected the true reading. Modern naturalists have applied the word *byturos* to a genus of Dermestidæ.

14. *Involvolus*, *Involvulus*, or *Involvus*

The words we have now to examine are purely Latin; they have, indeed, if I may be allowed the expression, a family likeness, and appear to be derived from each other.

We will begin with the word used by the oldest author, the same which occasioned these Researches.

Involvolus, or *involvulus*, occurs in Plautus. In the *Cistil-laïre*, Act I. Scene ii. ver. 455—458, a slave, *Lampadisca*, addressing her mistress, says of another slave, who is also one of the *dramatis personæ*, that she is like a dangerous animal:—

"Imitatur, nequam bestiam, et damnificam."

“Which, I pray you?” asks the mistress.

“Quamnam, amabo?”

The slave replies:—“The *involutus*; for as that creature rolls and wraps itself up in the leaf of the vine, so she is ambiguous in her conversation.”^e

“*Involvorum*, que in pampini folio intorta implicat se
Itidem hæc exorditur sibi intortam orationem.”

I find, in the Dictionary of Pomponius Festus,^f this definition of the word *involutus*:—“Vermiculi genus qui involvit pampino.”

Every one will recognise the *involutus* of Plautus in the *involutus* of Festus. It is the same word, with a very slight alteration. The singular economy of this insect is confirmed by the testimony of two authors; and we learn from Festus, that the *bestiola* of Plautus was the larva of an insect, and not a perfect insect.

15. *Convolvulus*.

Marcus Portius Cato, in his treatise *De Re Rustica*, gives a recipe against an insect named *convolvulus*, which breeds on the vine. This recipe consists in boiling the dregs of oil till they acquire the consistence of honey, and rubbing the top and joints of each plant therewith:^g—“*Convolvulus* in vinea ne siet, amurcam condito,” &c.—and, in conclusion—“Hoc vitem circum caput, et sub brachia unguito, *convolvulus* non nascitur.”

Pliny, quoting Cato, copies this recipe:^h—“Ne *convolvulus* fiat in vinea, amurcæ congios duos decoqui in crassitudinem mellis,” &c. &c.; and afterwards says—“Hoc vites circa capita ac sub brachiis ungi, ita non fore *convolvulum*.”

^e I have translated this passage literally, because my purpose is best answered by so doing: to see how it has been translated by others, Limiers may be consulted, *Cœuvres de Plaute*, in 12mo. tom. iii. p. 293; Levée, *Théâtre des Latins*, in 8vo. tom. iii. p. 416; *Théâtre de Plaute*, in 8vo. tom. iii. p. 187.

^f Pomponius Festus, liv. ix. p. 193, édit. de Dair.

^g M. P. Cato, *de Re Rustica*, c. 95; tom. i. p. 52, édit. des Deux Ponts; tom. i. p. 84, des *Scriptores Rei Agrariæ*, 2d édit. de Gesner.

^h Plin. liv. xvii. c. 28, 47; tom. ii. p. 91, de l'édit. d'Hardouin, in folio; tom. v. p. 741, de l'édit. de Franzius.

These passages, which are the only ones where the name *convolvulus* occurs, do not give us any information respecting the insect it was applied to, except that it was very injurious to the vine. We shall have to examine whether this insect is the same as the *involutus* of Plautus, or whether the two words were employed to designate two different insects.

16. *Volvox*.

We shall have no occasion to inquire if the insect called *volvox* by Pliny is the same as that to which he gives the name of *convolvulus*, for he distinguishes them himself.

This writer, after having pointed out a remedy against the *convolvulus*, informs us that the *volvox*, which eats the young grapes, is a different insect, and recommends, in order to prevent its attacks, that care should be taken to wipe the pruning-knife with the skin of a beaver, and to rub the vines in those places where they have been cut with bear's blood: "Alii *volvocem* appellant animal prærodens pubescentes uvas: quod ne accidat, falces, cum sint exacutæ fibrina pelle detergent, atque ita putant sanguine ursino liniri volunt post putationem easdem."

17. *Volucra*.—*Eruca*.

We cannot separate these two words in this discussion, because they are mentioned together in the same passage of Columella, and perhaps *volvox* ought not to have been separately considered, for I should not conceal the circumstance, that many editors read *volucra* instead of *volvocem*, in the passage of Pliny I have just quoted; but *volvocem* is the reading of all the ancient manuscripts, and *volucra* has only been introduced into his text because they have found a passage in Columella which, although somewhat different, seems to be derived from the same source; and as in Columella it is not possible to substitute the word *volvox* for *volucra*, because that word is a second time employed in the plural, in a verse which cannot be altered without injuring the metre, these editors of Pliny have determined to transfer into his text the reading of Columella. Gesner, the commentator on Columella, reasonably finds fault with them for making this change, and recommends that the readings

of the manuscripts should be retained in both authors, and the word *volucom*, consequently, restored to the passage in Pliny.

Columella, in his Treatise on Trees,¹ after speaking of the mice and rats that infest the vine, says:—"Genus est animalis, *volucra* appellatur, id fere prærodet teneras adhuc pampinos et uvas: quod ne fiat, falces quibus vineam putaveris, peracta putatione sanguine ursino linito . . . vel si pellem fibri habueris, in ipsa putatione quoties falcem acueris, ea pelle aciem detergito atque ita putare incipito:" "There is a kind of animal called *volucra*, which eats the young shoots of the vine almost entirely, and consumes the grapes. To prevent its attacks, when the vine is cut, it should be frequently rubbed with bear's blood, and whilst pruning the knife must be rubbed with the skin of a beaver every time it is sharpened."

In his poem on horticulture, Columella, after having spoken of culinary plants, recapitulates the disasters that deceive the hopes of the agriculturist, *i. e.* tempests, rain, hail, floods, and what is still more to be dreaded than these, the *volucras* and the caterpillars, enemies of Bacchus and the green willows, which poison the seeds, devour the leaves, and leave nothing besides a naked trunk, withered and useless:—

"Brassica, cumque tument pallentia robora betæ,
Mercibus atque olitor gaudet securus adultis,
Et jam maturis quærit supponere falcem
Sæpe ferus duos jaculatus Jupiter imbres,
Grandine dilapidans hominumque boumque labores:
Sæpe etiam gravidis irrorat pestifer undis
Ex quibus infestæ Baccho, glaucisque salictis
Nascuntur *volucres*, serpit *eruca* per hortos
Quos super ingrediens exurit semina morsu
Quæ capitis viduata coma, spoliataque nudo
Vertice, trunca jacent tristi conjuncta veneno."²

Thus the *volucra* and the *eruca* are here mentioned as different insects by Columella; the first are said to be particularly injurious to the vine, the second in osier grounds:—"Et quibus infestæ Baccho nascuntur *volucres*, glaucisque salictis (infesta) serpit *eruca* per hortos."

¹ Colum. *des Arbor.* c. 15; tom. i. p. 55.

² Columella, liv. x. *de Cultu Hortorum*, ver. 3, 26, 336.

This interpretation, which we think is the correct one, will occasion us to remark the singular fact, that, with the exception of the Vulgate translation of the Bible, and that of St. Jerome in Latin, where the word *gaza* is erroneously rendered *eruca*, the word *eruca* has never been used by the Romans, in a Latin form, for an animal particularly injurious to the vine. Pliny and Columella make frequent mention of the *eruca*, as being destructive to trees and plants in general, without excepting the vine, but they do not speak of it as injurious to the vine in particular; and when Palladius, in the passage we have quoted, gives a specific against the caterpillars that injure the vine, we see he employs the word *campæ*, and not *erucæ*.

This would incline us to conclude that, amongst the number of names used by the Romans for insects injurious to the vine, there do not occur any which were applied to caterpillars, or the larvæ of Lepidoptera; and we may presume that the insects which destroyed the vine, mentioned by the names *involutus*, *convolutus*, *volvax*, *volucra*, were considered by them as particular kinds of worms, or insects, and not as the larvæ of Lepidoptera, or caterpillars, or creatures of the same kind as the *campæ* and *erucæ*, and consequently that the Romans were not acquainted with the metamorphoses of these insects.

In this critical examination, I have been careful to omit no words made use of to designate insects injurious to the vine in those Hebrew, Greek, and Roman writings, which remain to us. We now come to the second part of this discourse, in which modern science will enable us to illustrate passages of ancient authors, and where we shall also give some practical instructions on the subject likely to be useful to the agriculturist.

(To be continued.)

ART. XV.—*Additional Notes on the Order Thysanoptera.*

By A. H. HALIDAY, M.A.

(See Vol. III. page 439.)

THE insects of this order are sometimes infested by *Ocypete*; and *Thr. cerealium* is often covered with the small white mites that are found in damp hay.

GENUS I.—PHLÆOTHRIPS.

In the pupa the antennæ are applied to the sides of the head, forming a regular margin. The close resemblance of *Phl. ulmi* to another very common species, makes a fuller description of each necessary.

Sp. 3. *Phl. ulmi*. *Piceo-nigra antennarum articulo 3^{to}. toto sequentibus basi flavo-pallidis; tibiis basi apiceque anticis totis tarsisque ferrugineis; femoribus anticis incrassatis; pollice distincto. Mas, subaptera: fem. subaptera, vel alata elytris subflavescentibus.*

Larva much depressed, white; the head, a bilobed spot on the prothorax, the last two segments of the abdomen and a lateral spot on the preceding one, black. A few black dots on the thorax. Antennæ black, with the base pale. Pupa white, with a few red dots on the thorax, and in the place of the simple eyes. Sometimes a faint reddish tinge in parts of the abdomen. The pterothecæ extend to the middle of the abdomen. The insects disclosed from these pupæ had perfect wings, but the subapterous individuals are more numerous.

Inhabits under the bark of dead trees, elm, ash, &c.

Sp. 3^a. *Phl. pini*. *Præcedenti simillima, sed magis elongata. Mas, subaptera: fem. subaptera, vel alata elytris extrorsum infumatis.*

The eggs are milky, or bluish white, about $\frac{1}{80}$ of an inch in length, by $\frac{3}{400}$ diameter. They are cylindric, with each end equally rounded, thus differing from those of *Phl. statices*. They are attached in loose clusters to the bark, and hardened by a gummy wash, soluble in water, by the application of which they are detached, and become flaccid. The larva is longer and less depressed than that of *Phl. ulmi*: of a red flesh colour, with the head and feet paler; the body is thickly freckled with bright red on a paler ground, which produces the general tint. The last two segments of the abdomen are black; also the antennæ, which have the base pale. Very young larvæ are of a dirty watery tint, with the antennæ and tail black. The antennæ are then proportionally larger; the abdomen small and attenuate, the hairs of the body very long and conspicuous. The pupa is very pale flesh colour, the red dots being fewer: the head whitish, with a reddish patch in the middle: the legs and last two segments of the abdomen white: the fore-thighs very little thickened. The pterothecæ were very small in those

examined, which would probably have produced subapterous individuals, these being the most numerous. The perfect insect exceedingly resembles the last species, but is longer, a female of *Phl. ulmi* measuring $\frac{11}{100}$ of an inch in length, by $\frac{2}{100}$ in breadth; while one of *Phl. pini*, scarcely so broad, was $\frac{11}{100}$ in length. The fore-thighs, besides, are less thickened, which difference is particularly observable in comparing the males. The winged females evidently differ by the darker colour of their wings, the upper pair being brown in the outer half, with the hind margin paler, and the lower having that margin alone brown.

Inhabits under the bark of old pine stumps in profusion.

GEN. IV.—THRIPS.

Sp. 2. *Thr. L. cerealium*.

The larva is deep yellow, with the greater part of the head, and two spots on the prothorax, dusky. The antennæ and legs have alternate rings of pale and dusky. The pupa paler yellow, with the antennæ, legs, and wing-cases, whitish, the latter reaching to the middle of the abdomen. The eyes are dusky red, and the simple eyes sometimes indicated by red dots.

Sp. 5. *Thr. A. nitidula*.

Shorter than *Thr. rufa*, dusky chestnut, with the eyes and incisures of the abdomen darker; the antennæ (except the sixth joint) with the shanks and feet, paler.

Sp. 7. *Thr. phalerata*.

The larva is entirely reddish orange.

Is common on the flowers of *Vicia sativa*.

Sp. 10. *Thr. atrata*.

Abounds most of all upon *Spergula nodosa*.

Sp. 15^a. *Thr. Persicæ*.

The larva is entirely light yellow, not unlike that of *Thr. ulmi-foliorum*, but without the small spines at the tail.

A small species, found on the diseased leaves of peach-trees.

GEN. V.—MELANTHRIPS.

Sp. 1. *M. obesa*.

Is common in the flowers of *Sinapis nigra*.

ART. XVI. — *Notes, &c. upon Diptera.* By A. H.
HALIDAY, M.A.

1. *Notes upon Diptera.*

THE leaves of the holly often abound with the larvæ of *Phytomyza obscurella* (Fallen, Phytom. 4, No. 8), which mine below the cuticle, producing patches like blisters. The puparium is much flattened, of eleven segments, and light chestnut in colour. When the fly is ready to come forth, its parts may be distinctly seen through the case, the eyes and wings being dark, the rest pale; only the hairs of the thorax have their full blackness, and are laid flat on the back. The eyes of the fly lie at the fourth segment of the puparium, the first three being occupied by the frontal vesicle. When the fly is about to emerge, these segments split down each side from the double point (*i. e.* the anterior spiracles) to the eyes, and the vesicle is protruded and inflated, assuming various forms, and being at intervals contracted and wrinkled. When at its full extent it is almost as large as the thorax. It is entirely composed of a soft skin, minutely punctured, without hairs or inequalities. When the fly has nearly got free, the vesicle is contracted about the middle, so as to show the true form of the head; and its exterior pouch is soon introverted and withdrawn into the head, the two transverse lines, or wrinkles, at which it was strangled, being applied to each other, and forming the suture which separates the front from the face. When the fly is emerging, the halteres are inflated, and the antennæ reclined, with the arista pointed under the eye. The hind-legs are used to wipe and develop the wings.

Phytomyza flaviceps (Macquart, S. a B. II. p. 616, No. 3), was bred from subcutaneous larvæ in the leaves of woodbine, by Mr. G. C. Hyndman, from whom I received specimens of the fly.

For some seasons past, Mr. Hyndman has found plants of *Veronica chamedrys*, with the opposite leaves connected all round by their edges, forming an oval case, containing the larva of a *Cecidomyia*. The fly has the two posterior nervures of the wing connected near the middle, and in other respects seems identical with *C. bicolor*.

A capsule very similar is constructed of the leaves of *Hypericum perforatum* and *H. humifusum*, by another *Cecidomyia*, described by Mr. G. Gene, and figured in the Memoirs of the Academy of Turin, Vol. XXXVI. page 287.

Psila bicolor, which occurred abundantly in the beginning of August, at Moundstone Bay, in Connanara, appeared to be exclusively attached to *Tanacetum vulgare*.

Leucopis obscura (Ent. Mag. Vol. I. page 173) is found on larch and fir-trees, at Holywood, in the month of August.

Opomyza maculata (Macquart, S. a B. II. p. 558, No. 15), which, as well as *Geomyza marginella* (Fallen, Geom. 3, No. 5), belongs to the genus *Helomyza*, is not uncommon among *Elymus arenarius*, on the sandy coasts of the county Dublin.

Anthomyza grisea (Fall. Agrom. 7, No. 2) is found in the same situations, but very rarely.

Chyliza annulipes (Macq. S. a B. II. p. 380, No. 2) was taken in July at Blarney, near Cork.

Toxoneura fasciata (Macq. S. a B. II. p. 404, No. 1) has occurred at Holywood, and was the cause of my erroneously inserting *Otites pulchella* in a former list. This species should therefore be erased from the Irish Fauna. *Toxoneura* presents a very trifling modification of the characters of *Palloptera*. The latter genus has been rightly circumscribed by Fallen, but confounded by R. Desvoidy, with several species of *Helomyza*, in his genus *Suillia*, and by Macquart mixed with some *Lyciæ*. The larvæ of the latter are saprophagous, while the *Palloptera* breed in flowers, like *Trypetæ*. The generic name *Sapromyza*, interpreted by etymology, would probably be applicable only to the genera *Lycia* and *Scyphella*,^a as I have reason to think that the remaining groups, viz. *Sylvia*, *Minettia*, and *Peplomyza*,^b are thalerophagous, as well as their near affinities, the *Lauxaniæ*. *Estelia*, (Rob. D.) is synonymous with *Ochthiphila*, Fallen, and should, perhaps, constitute a separate tribe.

Teichomyza fusca (Macq. S. a B. II. p. 535, No. 1) is found on the damp walls of old buildings, and Macquart states

^a With which the *Lisellæ* are not only generically, but, in one case, specifically identical.

^b Characterised in Vol. I. of this Magazine under the generic name *Phyllomyza*, previously employed by Fallen for another group.

that the larvæ feed among the decayed mortar. I have found it in Dublin, but always in winter, and have received English specimens from my friends, Mr. Curtis and Mr. F. Walker. *Teichomyza* can only be considered as a section of the genus *Ephydra*, Fallen.

Herbina suillioidea (Rob. D. p. 698, No. I.) is the insect which I referred to in Vol. I. of this Magazine, as perhaps a variety of *Helomyza ustulata*, from which I believe it is quite distinct. It occurs, but rarely, in Ireland and the Western Isles, in the same situations with *Helomyza tigrina*,^c from which, at first sight, it differs only by the more hoary tinge and generally inferior size. When examined with a lens, the pubescent arista at once discriminates the species.

2. Characters of some undescribed Species of the Family Muscidæ.

I. CALYPTERATI, R. D.

TRIB.—MUSCIDÆ, R. D.

GEN.—MUSCA, Meig.

Subgen.—MORELLIA, R. D.

Sp. 1. M. M. hortorum. *Calyptris infumatis*.

Musca hortorum, Fall. *Musc.* 52, No. 33.

In the male, the fore and middle shanks are nearly naked: the fore-thighs ciliate beneath: the hind-shanks scarcely curved, having a few long hairs on the inside, below the middle.

Sp. 2. M. M. importuna. *Calyptris albis*.

Morellia agilis, Rob. D. 405, No. I. ?

In the male, the fore-thighs are thickly bearded below: the fore-shanks clothed with short thick hair on the inside, and tufted with long hairs behind, from the middle downwards. The middle-thighs have a larger tuft at the tip, and the shanks are thicker, with the down on the outside standing up. The hind-shanks

^c *Suillia communis* of Rob. Desvoidy, but not *Musca suilla*, F., which seems rather to be identical with *Helomyza nemorum*.

are longer and curved, nearly naked inside, but with a few long hairs scattered on the outside.

This species is much more common than *M. hortorum*, about Holywood.

TRIB.—ANTHOMYZIDÆ, *Latr.*

GEN.—ANTHOMYIA, *Meig.*

Subgen.—FANNIA, *Rob. D.*

Sp. A. *F. aprica*. *Cinerea pedibus posterioribus testaceis.*

Except in colour, agrees with *A. F. rufipes*^d (Fall. Musc. p. 84, No. 3.) The thorax and abdomen are cinereous; the impressions of the latter in the male produce, in some lights, a band of triangular dark spots. The face and orbits are silvery in the male, duller white in the female; the frontals, antennæ, and palpi, black. The wings obscure, their base, with the calyptra and poisers, yellow. The fore-legs almost black in the male; in the female the thighs are testaceous at the base and tip. The thighs and shanks of the other legs are testaceous; the structure of the middle pair exactly as in *A. F. rufipes*.

At Holywood; in sunny places; not common.

Note.—The subgenus *Fannia* may be distributed in the following sections.

A. Legs rufous.—*A. ornata, rufipes, aprica.*

AA. Legs black.

B. Thorax streaked.—*A. scalaris, lepida.*

BB. Thorax black.—*A. manicata, armata, &c.*

I can see no sufficient cause for regarding the subgenus *Philinta* (Rob. D.) as distinct from *Fannia*.

II. ACALYPTERATI.

TRIB.—SCATOMYZIDÆ, *Fallen.*

GEN.—CORDYLURA, *Fallen.*

Subgen.—DELINA, *Rob. D.*

Sp. C. D. *flava*. *Flava alis hyalinis.*

Yellow, with hyaline wings: a dot on the vertex and the occiput

^d Described by Macquart (S. a B. II. 312, No. 10) under the name of *Limnophora hamata*. I have received it from F. Walker, Esq.

somewhat dusky: orbits and face whitish: arista black, very slender: palpi not dilated. (Length, above 2 lines; wings, 4½.) In moist places, Holywood; in the month of June; rare.

TRIB.—GEOMYZIDÆ, *Fallen.*

GEN.—OPOMYZA, *Meig.*

Subgen.—GEOMYZA, *Fallen.*

Sp. O. G. *sabulosa. Ferruginea puncto verticis thoraceque fuscis, abdomine nigro, alis abbreviatis.*

Head, antennæ, and legs, pale ferruginous; a spot on the vertex, and two larger patches on the occiput, brown. Thorax dusky. Abdomen glossy black. Poisers pale. Wings imperfect, scarcely longer than the thorax, and very narrow. The hairs of the arista are much shorter than in *O. G. combinata*, &c. (Length, ¾ line.)

Occurs but rarely, at the foot of the sand-cliffs which skirt the Bay of Killiney, and on the sands of Port Marnock. It leaps with great vigour, but cannot fly.

Subgen.—LEPTOMYZA, *Macq.*

Sp. O. L. *cinerella. Cinerea, fronte antice et antennis subtus ferrugineis, facie palpisque albidis.*

Ash-colour, the head and thorax, above, of a rusty tinge. The margin of the front, and the third joint of the antennæ, beneath, rusty-red. The face and palpi yellowish-white. The extremity of the abdomen, in the female, attenuate, inflected, and terminated by two styles. Halteres yellowish-white. Wings brownish; the second transverse nerve distant by twice its own length from the margin, the interval of the transverse nerves scarcely greater. The legs long and slender, black, the base of the shanks and feet sometimes brownish. (Length, 1 line; wings, 2, or less.)

On the muddy sea-shore at Holywood; in August.

GEN.—DIASTATA.

Sp. D. *fulvifrons. Thorace cinereo, abdomine nigro, fronte pedibusque ferrugineis, alarum basi fusco-maculata.*

Allied to *D. obscurella*, the antennæ similar, but the hairs of the arista shorter. Front and antennæ ferruginous, face whitish.

Occiput and thorax cinereous. Abdomen black, greyish towards the base. Poisers whitish. Wings obscure, with a dusky costal spot at the base. (Length, $1\frac{1}{2}$ line; wings, $2\frac{3}{4}$.)

Has occurred but twice at Hollywood.

A. H. H.

ART. XVII.—*Verses on Spring.* By H. S. B.

Medio de fonte leporum
Surgit amari aliquid quod in ipsis floribus angat.

I.

In rainbow garb of smile and shower
Sweet Spring returns,—desired Spring :
Caressingly o'er brake and bower
Waves the soft West his airy wing.
In higher arch Day's orient car
Refulgent climbs the southern height ;
And later gleams the Evening star,
Paled in a flood of pearly light.

II.

Wreath after wreath—how radiant Dawn
The curling mists with glory fringes !
And slanting onwards, wood and lawn
In hues almost celestial tinges.
See, springing from the spangled clod,
The early lark mount skyward, till
She, pouring all her soul abroad,
Is heard aloft,—invisible.

III.

With frequent splash and gurgle soft,
All voice and sparkle, hurries by
The elfin-rill, yet lingers oft
Where pools in browner shadow lie,
And lurking dim, the speckled trout
Insidious marks with upward gaze
The glancing swarms, that all about
Rise and revolve in lucid maze.

IV.

Now o'er the path a sultry hum
Is floating on the breathless air ;
And leafy groves again become
A covert from the noon-day glare :
There, as th' entangled sunbeams flow
In sparkling rout athwart the glade,
The quivering foliage plays, below
Repeated in the chequered shade.

V.

As twilight falls, the nightingale
And thrush in mellow concert vie,
Filling the windings of the vale
With long-drawn fits of melody.
And while to Night some dewy-damp
Pale flowers their love are whispering,
The glow-worm hangs her tiny lamp
By fringed copse or faery ring.

VI.

Enchanted hours of love and song !
Spring-time of life !—why were ye ever
Fleeting as bubbles swept along
By hoarse Avoca's dusky river :
Image of Time ! thy dark waves bear
Upon the surface straws and foam,
Flung on the bank and lost in air
Ere thou have reached thy ocean-home.

VII.

So—fled our Spring—we learn to know
Its joys the root of future pain,
Our cherished fame an empty show,
Our time mispent, our science vain :
Happy—if warned in time, before
We find our home the heaped sod,
Faith and repentance may restore
The changed spirit back to God.

H. S. B.

ART. XVIII.—*Thoughts on the Study of Entomology.*

SIR,—I do not know if the following thoughts are suited to your Magazine, but if you think that they will do any good, they are at your service.

I was very much pleased by reading, in your last Number, the Rules of the Entomological Club, and I sincerely wish that such societies were more general. It is not now very often necessary to offer any defence of entomology; yet most persons are very ignorant of the nature and habits of insects. People go through the world with their eyes shut, and complaining of having nothing to do, though surrounded by the most interesting objects. The book of Nature is open on all sides, and on every leaf is something to engage our attention; and of all the branches of natural history, I believe none is so engaging as entomology, and certainly none is easier of pursuit.

Who does not remember some happy time in his childhood, when on a bright and sunny day he ran after the butterflies in the fields, and, attracted by their beauty, and too happy to care, was heedless of flowers he trampled under foot? Who, thinking of that time, does not wish he could recall those joys and be a child again; and does not regret that his entomology ended there?

It is in vain that we complain of the vicious and immoral pursuits of men, if we do not at the same time give them some better object to engage their intellectual powers. The evil is, that their attention has too often been directed to morality and science in dry and abstract forms, and they have turned away in disgust. If our young men, instead of idling their time in the streets or in frivolous amusements, were to walk into the fields, looking for plants and insects, they would have a far higher gratification than they can at present possibly possess. But they do not these things, because they are ignorant of them, or have no taste for them; and therefore every lover of nature and mankind must be anxious to see natural history take a prominent place in our systems of education. If, for instance, boys, instead of being taught to look upon insects with disgust, were led to view them as highly beautiful instances of the skill and contrivance of the Creator, they would

soon acquire a love of the science, and would eventually become wiser and happier men than they would otherwise have been.

I hope we shall soon begin to see our way to such a desirable state of things; and wishing that the Entomological Club, and your Magazine, may continue to prosper,

I am, Sir, your obedient servant,

AMICUS.

CITY, Aug. 30, 1836.

ART. XIX.—*List of Rare Insects, taken at Darenth Wood, by Members of the Society of Practical Entomologists, from June 20 to July 11, 1836.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—Observing that the pages of the Entomological Magazine are open to receive all communications respecting the captures and locality of rare insects, we hand you the accompanying List of Captures, made by members of the Society of Practical Entomologists, in Darenth Wood, between the 20th of June and the 11th of July, in the present year.

Believing this List (should you think it worthy of insertion in your valuable Journal) may be interesting to collectors, particularly those residing near the metropolis,

I am, your obedient servant,

J. T. NORMAN, *Sec.*

COLEOPTERA.

Agrilus biguttatus.
Elater præustus.
Molorchus umbellatarum.
Leptura sexguttata.
Eryx nigra.

LEPIDOPTERA.

Sesia fuciformis.
bombiliformis.
Ægeria apiformis
bembeciformis.
vespiformis.
æstriformis.

Ægeria myopæformis.
formiciformis.
Triphœna fimbria.
Acronycta ligustri.
Polypogon derivalis.
Hipparchus papilionarius.
Lozotænia cinerana.
Grotiana.
Pseudotomia Jacquiniana.
Semasia Splenditana.
Paramesia cerusana.
Macrochila marginella.
Adela Sulzella.
Frishella.
Crambus pinitellus.

Observations on the above.

Agrius biguttatus was taken in the hollow to the left of the main path through the wood.

Elater præustus, on the western edge of the wood.

Molorchus umbellatarum was in the greatest profusion.

Egeria apiformis, *bembeciformis*, *cynipiformis*, *myopæformis*, *formiciformis*, and *vespiformis*, *Sesia fuciformis* and *bombyliiformis*, and *Polypogon derivalis*, were taken in the hollow.

Acronycta ligustri, on the trunks of oaks.

Several of the larvæ of each of the following insects were found full-fed on the 11th of July:—*Nolodonta perfusca*, *Chaonia roboris*, and *Biston prodromarius*.

ART. XX.—*Description of the Genera and Species of the British Chrysididæ.* By W. E. SHUCKARD, M.E.S.

It is not from having made any notable discoveries, or additions to the already recorded indigenous species of these exceedingly pretty insects, that I am prompted to bring together the dispersed notices of them, but from a desire that season after season shall not pass away without making them more accessible to cabinets in general, by placing in the hands of the remote collector the ready means to determine his captures, and thereby stimulate him to further exertion.

Latreille, in the second edition of the *Règne Animal*, makes them the sixth tribe of the second family, viz. of the *Hymenoptera pupivora*; he had previously placed them preceding the *Oxyurites*, in his *Familles Naturelles*, but he here alters their situation. I have not leisure at the present moment to discuss the question, for this paper will be solely technical, and I therefore leave them where he places them; but they form a very natural group, the essential character of which is, an articulated ovipositor, each articulation of which is retractile within the other, like the tubes of a telescope. Latreille says they have a sting at the end of it. I know, from experience, that it will frequently puncture and produce momentary pain,

which I consider as solely mechanical, for it has no true *aculeus*, a necessary condition of which is, that it should likewise instil a poison; but no poison-secreting organs have yet been detected in them, nor have I ever understood that the puncture has produced inflammation. They are supposed to be parasites—many, to all appearance, upon species of the genus *Odynerus*, and some upon *Osmia bicornis*, *Halicti*, and *Andrenæ*. But little is known of their history. Dahlbom says, their larvæ are apods, and subvermiform. In hot, sunny, sandy places, they are to be observed running and flying with agility, and in constant motion, investigating every aperture or crevice they meet with. They are also found in numbers upon palings, posts, the trunks of trees, and the leaves of plants, but less frequently in the latter situation, and never but in the sunshine. But their habits vary as much as their habit, and did we know their history thoroughly we should, I dare say, find that they differ as much throughout their developments as when arrived at their perfect state, which will necessarily be adapted to their respective functions. But, not to weary the reader with hypotheses, I will give a short synopsis of the external characters which separate them into their several genera. But I must premise that they are, in the majority of species, of a tolerable size; and I have never observed, even amongst their minimis, one less than a line in length, nor quite so small; and their colours are more or less metallic, in which copper, gold, steel, and brass, vie with each other in refulgency; but *retournons à nos moutons*.

- | | |
|---|----------------|
| A. Thorax narrowed in front: abdomen lanceolate, not convolvent | I. CLEPTES. |
| B. Thorax not narrowed in front, and truncated at both extremities: abdomen concavo-convex, convolvent. | |
| 1. Scutellum not produced. | |
| <i>a.</i> Abdomen semi-cylindrical | II. CHRYSIS. |
| <i>b.</i> Abdomen subquadrate | III. EUCHREUS. |
| <i>c.</i> Abdomen semi-circular | IV. HEDYCHRUM. |
| 2. Scutellum produced at its apex into a flat macro | V. ELAMPUS. |

Short generic descriptions will suffice for the ostensible object of this paper, which is merely to facilitate the recognition of species, and especially as brief external generic characters will sufficiently mark the discrepancies of the British

genera, which do not interlink so closely as to require a detailed examination of the oral organs. The British entomologist may, therefore, take for granted, that sufficient differences exist, besides those given, to warrant retaining the genera already established.

GENUS I.—CLEPTES, *Latr.*

Head transverse, as wide as the mesothorax: antennæ with thirteen joints in both sexes: prothorax subquadrate, somewhat narrowed in front: metathorax truncated, and produced on each side into an acute spine: legs moderate: superior wings with a closed marginal cell, the radial^a nervure being rounded; the cubital nervure is obsolete just beyond the first recurrent, but the space it leaves for the submarginal cells is unusually wide; the first and second discoidal cells complete, small, the latter oblong-quadrate; the first apical cell almost complete, but the subdiscoidal nervure does not quite extend to the apex of the wing: abdomen ovato-conical, with five segments in the male, and in the female four, with a protruded ovipositor.

In general habit, the insects of this genus approach closely to the aculeate genera *Meria*, *Plesia*, and *Tiphia*, but their retractile ovipositor, parasitic habits, and metallic colours, necessarily bring them into the present family. They cannot, from the structure of the abdomen, roll themselves up, like the other species of the family, upon the approach of danger.

Sp. 1. *Cl. semiaurata*.

Latr. Hist. Nat. T. XIII. 236. 1. Nouv. Dict. VII. 190. Fab. Piez. 154. 1. Le Pelet. Ann. du Mus. T. VII. 119. 1.

Sphex semiaurata . . *Linn. Fn. Succ. 1661. Systema, Ed. 12. 946. 35.*

Chrysis semiaurata . . *Fab. S. E. 357. 14. Sp. 457. 17. Oliv. Ency. Méth. Ins. II. 676. 21.*

^a For an explanation of the terms I use in the description of the nervures of the superior wings, I must refer to my Essay on the Indigenous Fossorial Hymenoptera, p. 17, and the illustrative plate; and also to a Paper on the Neururation of the Superior Wings of the Hymenoptera in general, where they are treated in greater detail, which will appear in Part III. of the Transactions of the Entomological Society.

Ichneumon semiauratus, *Fab. Mant.* 269. 127. *Ent. System.*
II. 184. 210.

Id. *splendens*. *Fab. Ent. Syst. Sup.* 229. 211. ♂

Cleptes splendens . . *Fab. Piez.* 155. 3.

Ichneumon auratus. . *Panz. F. G.* 52. 1. ♀ *Cleptes*.
Panz. Krit. Rev. II. 95.

Id. *semiauratus*, *Panz. F. G.* 51. 2. ♂ *Cleptes*.
Panz. Krit. Rev. II. 95.

Id. id. *Rossi.* II. 8vo. 78. 790.

In the *male*. Head, first joint of the antennæ, and thorax, of a brilliant metallic green or blue, and very much punctured, especially the vertex and the prothorax; the metathorax rugose: the wings slightly fuscous, with an iridescent reflection; the nervures piceous: the legs testaceous, excepting the femora, which are all of the same colour as the thorax; but the posterior ones are above testaceous, which becomes fuscous towards the apex: the extreme tip of the coxæ, the four posterior trochanters, and the extreme base of the femoræ, are red: the tarsi dusky: the abdomen shining testaceous, with the marginal half of the third segment black, and the fourth and fifth of a steely-blue.

In the *female*, the head and thorax are of a rich coppery-red, or gold-colour, less deeply punctured than in the male: the antennæ testaceous; the eight apical joints fuscous: the wings with a clouded fascia passing over the base of the space apportioned to the submarginal cells and the discoidal cells, and another dark cloud towards the apex: the legs entirely testaceous: the abdomen the same, except the black margin of the third segment, as in the male, and the fourth of a metallic blue or green: ovipositor exerted. (Length, 3—3½ lines; expansion of the wing, 5 lines.)

This species has been found all round the metropolis. Mr. Westwood once took it in numbers at Chelsea; it has occurred near Southgate, captured by Mr. Walker; and it has been taken in the Regent's Park. I have taken males this year at Old Brompton. St. Fargeau considers that it is parasitic on a *Tenthredo*.

Sp. 2. *Cl. nitidula*. *Rossi.*

Latr. Hist. Nat. T. XIII. 236. 2. *Le Pelet. An. du*
Mus. VII. 119. 2. *Fab. Piez.* 154. 2.

Ichneumon nitidulus. *Rossi*, II. *Fab. Ent. System.* 184.
211. *Coquebert*, 19. Pl. 4. Fig. 5.

The *male*. I can detect no difference between the insect I possess, as the male of this species, and the male of the preceding, with the exception of the slighter exertion of the fifth abdominal segment, and the colour of the head and thorax being more blue.

The *female* has the head bronzy, inclining to coppery; the scape of the antennæ bronzy above, red beneath; and the two first joints of the flagellum also red, the rest black; vertex and face with scattered deep punctures: prothorax testaceous; mesothorax bronzy black, both slightly punctured; metathorax blue and rugose; legs testaceous: the intermediate and posterior coxæ, trochanters, and femoræ, of a bronzy black: abdomen shining testaceous, with the posterior half of the third segment black, and the fourth steely-blue: ovipositor exerted.

I believe this species has not occurred near London; it has been found in Suffolk, by Mr. Rudd, and it has also occurred in the New Forest, Hants. The male is not yet fully or well determined; the differences between the one I have received as such from my friend, the Rev. G. T. Rudd, and the preceding species, are too slight to admit of my considering it determinate, for I have carefully examined it under a lens of high power.

GENUS II.—CHRYISIS, *Linn.*

Head transverse, as wide as the thorax, which is truncated anteriorly and posteriorly, and the metathorax has a minute tooth on each side: abdomen consisting of three segments, the third being sulcated towards its extremity, and along the margin of this sulcation it has a row of minute fossulets: the apex frequently dentate, but the teeth, in some species, obsolete, or entirely deficient: the superior wings with a marginal^b and first and second discoidal cells complete, and a first apical cell nearly complete: the radial nervure forms an angle (except in *Chr. cyanea*, where it is rounded,) and the second discoidal is quadrangular (except in *Chr. neglecta*, where it is triangular): legs moderate.

The insects of this genus possess the power of rolling themselves up into a ball upon the approach of danger. They are supposed to be parasitic, but their history is not known, as their earlier stages have not been ascertained. They are to be

^b This cell is open in *Chrysis neglecta*.

found almost every where in the height of summer in sunny situations; they are extremely active.

Sect. I. *Abdomen more or less dentate at the apex.*

Sp. 1. Chr. ignita.

Linn. F. S. 1665. *S. N.* 947. 1.

Fab. S. E. 358. 6. *Sp. I.* 455. 8. *Mant.* 283. 9.

Ent. Syst. II. 241. 10. *Piez.* 173. 14.

Olivier, Ency. Mét. Ins. II. 673. 11.

Latr. Hist. XIII. 238. 4. *Nouv. Dict.* VII. 71.

Le Pelet. Ann. du Museum, VII. 126. 12.

Cuvier, Tableau Elémentaire, 502. 1.

Panz. F. G. 5. 22.

Spin. I. 64. 6.

Rossi, F. E. II. 119. 842. in 8vo.

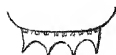
Donovan, Brit. Insects, Vol. I. pl. 7.

Schrank, F. B. II. 2. 344. 2195.

Var. 1.—(*Alcione.*) Head, thorax, and legs, (except the tarsi, which are black,) of a beautiful metallic blue or green, occasionally and variously splashed with a golden refulgence; sometimes dull blue: abdomen of rich refulgent metallic crimson, red, or purple, sometimes obscure, the apex terminated by four teeth; the two central ones distant from each other and nearer the lateral ones, their apices describing a curve: head, thorax, and abdomen, very coarsely and deeply punctured, the margin of the second and entire third segment being less deeply so; an elevated longitudinal smooth line running down the centre of the abdomen, frequently obsolete upon the third segment. (Length, varying from 3—7 lines; expansion of wings, from $5\frac{1}{4}$ — $10\frac{1}{2}$ lines; from the inspection of twenty individuals.)



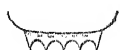
Var. 2. (*Asterope.*) Colour and sculpture nearly the same as in the former, but the terminal teeth of the abdomen are at equal distances, their apices describing a decided curve. The colour is generally somewhat less vivid, and the apical portion of the second segment, and the entire third, is a little more punctured, but in general habit it much resembles it. (Length from 4— $5\frac{1}{2}$ lines, from the inspection of seventeen individuals.)



Var. 3. (Celeno.) In this variety the abdomen is much more punctured than in the two preceding; it is also more quadrate, being broader in proportion to the general size. Its colour is more opaque; the terminal teeth also have the two central ones closer together, and the lateral ones wider from them, the depth of the central curve or emargination being considerably less than that of the lateral ones, and the apices of the teeth nearly equal. (Length from $3\frac{1}{4}$ — $4\frac{1}{2}$ lines; from the inspection of thirty-four individuals.)



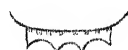
Var. 4. (Electra.) In this the puncturing and refulgence of the abdomen resemble *Var. 3*, but the terminal teeth are all at equal distances, the emarginations they form are of equal depth, and their apices are in a straight line. (Length 3 — $4\frac{1}{2}$ lines; from the inspection of nineteen individuals.)^c



Var. 5. (Maia.) In this the puncturing and refulgence is the same as the *Var. 3* and *4*, but the terminal teeth are considerably bent round the lateral emarginations, describing two-thirds of a circle, and the lateral teeth advance beyond the central ones. (Length from $3\frac{1}{2}$ — $5\frac{1}{2}$ lines; from the inspection of two individuals.)



Var. 6. (Taygeta.) In this the sculpture of the abdomen is the same as in the last, but the apices of the teeth describe a slight curve, and the two central ones are closer together than to the lateral ones. (Length $3\frac{1}{2}$ — $4\frac{1}{2}$ lines; from the inspection of two individuals.)



I must make a few observations upon the colours of these insects, which have been too often had recourse to for specific subdivision in British entomological cabinets. In every variety above described, the colours vary in intensity from brilliant green and gold to deep blue, and the abdomen from crimson, with a golden refulgence, to purple, and even its darker shades, arising, I conceive, from the quantity of juices within the insect at the time of its death, and also from the mode of killing, or the length of time in dying. As no two specimens agree exactly in colour, I was obliged to resort to what I consider safer characters, but which I think are also doubtful, and characterise nothing more than varieties; still

^c In this wood-cut there should be but four teeth.

it has struck me as remarkable, that *Vars.* 1 (the type) and 2, agree together in general habit and sculpture, as do also *Vars.* 3 and 4. In the former two varieties the effulgence of the abdomen is greatest, having smooth portions, but in the latter two, it is uniformly punctured throughout, which gives them a more opaque appearance; and even those which have a golden glow are less vivid than in the two first varieties. In these, both sexes appear to be mixed, but there are fewer males than females. *Var.* 3 appears to consist entirely of females, and *Var.* 4 of males; these, perhaps, may constitute species, viz. 1 and 2, one, and 3 and 4, another. I have not data sufficient to found any hypothesis upon as to their habits, or thence to separate them, as I have omitted distinguishing those which I have collected upon old road rails, &c., from those that I have taken upon sand; but this description of them may perhaps lead to some satisfactory result in giving a clue for entomologists to thread the maze by. Species in other orders have certainly been established upon much less tangible characters, and therefore, although I have considered them as varieties merely of one insect, I have given them names, which can be rejected or adopted at pleasure. In general habit, *Vars.* 5 and 6 resemble 3 and 4, but too few have occurred to admit of my considering them more than varieties; upon which subject I may observe, that we find, throughout the domains of nature, some genera and species have a constant inclination to vary from their types, whereas, others are constantly true to one peculiar structure. This species, therefore, may possibly admit of being classed amongst the regular irregularities.

Sp. 2. Chr. Ruddii.

Head, first and second joints of the antennæ, and legs, excepting the tarsi, of a rich green or blue, more or less splashed with gold; the collar and scutellum more or less cupreus; the tarsi and flagellum of the antennæ black: the abdomen of a rich carmine pink, opaque, and occasionally with a golden glow, very densely and minutely punctured with a slight longitudinal carina along the centre, becoming obsolete on the third segment: the terminal teeth approximating to *Var.* 2 of *Chry. ignita*. (Length 4—5 lines.)

It will be expected that I should give my reasons for considering this, which has the same distribution of colour as all

the varieties of the *C. ignita*, a distinct species, and why I treat those merely as varieties. I may refer to my observations under that species for some reasons; others are, the minutely punctured abdomen, its invariably carmine pink colour, and the coppery refulgence, always in some degree present, of the prothorax and scutellum. I have much pleasure in dedicating this elegant species to my kind friend the Rev. G. T. Rudd, he having first attracted my attention to it by some splendid specimens from the New Forest. His claims upon entomologists for his discoveries in the obscure families of the *Staphylinidæ* and of the *Ichneumonæ adsciti*, justify also a departure from the rigid rules of scientific nomenclature, which are but too frequently sinned against to record merely a private friendship. This species has occurred near London, and in the New Forest, Hampshire.

Sp. 3. *Chr. fulgida*.

Linn. F. S. 1699. *S. N.* 948. 7.

Fab. Sp. I. 455. 7. *Mant.* 283. 7. *Ent. Sys. II.* 240. 8. *Piez.* 172. 11.

Coquebert, 59. *Pl.* 14. 6.

Olivier, Ency. Mét. Ins. II. 673. 9.

Latreille, Hist. XIII. 237. 2.

Le Peletier, Ann. du Muséum, VII. 126. 13.

Panz. F. G. 79. 15. *Spinola*, I. 64. 4.

Schrank, F. B. II. 2. 343. 2194.

Head, first joint of antennæ, thorax, and first segment of abdomen, of a metallic green, playing into blue, with occasionally bright golden spottings; all these colours varying in almost every individual; second and third segments of the abdomen of a golden red, sometimes obscured, the terminal teeth the same as in my *Var. 2* of *Chr. ignita*: venter green: wings fuscous, very slightly iridescent; nervures picceous: legs metallic green or blue: tarsi and flagellum of antennæ black: head, thorax, and abdomen, very much and deeply punctured, the latter having a central, longitudinal, smooth, elevated line. (Length, $4\frac{1}{2}$ — $5\frac{1}{2}$ lines; expansion of wings, $6\frac{3}{4}$ — $7\frac{1}{2}$ lines.)

This species has occurred at Combe, Darenth, Birch Wood, and Bexley; Mr. Walker has taken it near Southgate; Mr. Ingall, at Camberwell; and Mr. F. Smith, at Blackwater, Hampshire.

Sp. 4. Chr. Stoudera.

Jurine, Pl. 12. F. 9.*Spinola*, II. 169. 14.

Head, first joint of antennæ, thorax, first segment of abdomen, and a large semicircular spot at the centre of the base of the second segment, of a metallic green or blue, splashed occasionally with gold, the remainder of the abdomen of a golden red: the terminal teeth as in my *Var. 6* of *Chr. ignita*: wings slightly clouded; nervures piceous, legs metallic green or blue: tarsi black or piceous: sculpture as in *Var. 6* of *Chr. ignita*. (Length, $3\frac{3}{4}$ lines; expansion of wings, $6\frac{1}{4}$ lines.)

Mr. Stephens, to whom I am indebted for this insect, tells me, he used to take it formerly at Darenth; I know no other locality where it has occurred.

Sp. 5. Chr. analis.

Spinola, *Ins. Lig.* II. 26. No. 26.

Deeply punctured: the abdomen without the central, smooth, longitudinal, and elevated line: head, thorax, legs (except the tarsi, which are reddish), and third segment of the abdomen, of a metallic blue or green, splashed with gold: the first and second segments of the abdomen of a golden red, the apex of the third with four teeth. (Length, 3 lines.)

"The only British specimen of this beautiful insect I have seen, was certainly taken at Yarm, by me." (Note of T. Meynell, jun. Esq. to the Rev. G. T. Rudd, to whose kindness I am indebted for a sight of the insect, and for being able to describe it.) It is singular that the name Mr. Rudd proposed for it should agree with that which I subsequently discovered *Spinola* had applied to it. I have seen a foreign specimen of it in the collection of Mr. Curtis, taken by him at Rouen, in Normandy.

Sp. 6. Chr. bidentata.

Linn. Syst. Nat. 947. 2.*Fab. S. E.* 358. 7. *Sp. I.* 456. 9. *Mant.* 283. 10.*Ent. Syst.* II. 241. 11. *Piez.* 173. 16.*Olivier, Ency. Méth. Ins.* II. 674. 12. *Le Peletier, Ann. du Muséum*, VII. 128. 23.*Panz. F. G.* 77. 15. *Donovan, Brit. Insects*, Vol. I. Pl. 19.

Chr. dimidiata? *Fab. E. S. Sup.* 258. 15. 16. *Picz.* 174.
 22. *Coquebert*, 58. Pl. 14. F. 2 and 3.
Latr. Hist. XIII. 238. 5. *Le Peletier*,
Ann. du Muséum, VII. 127. 20. *Spin.*
 II. 170. 15.

Head, first joint of antennæ, metathorax, excepting post dorsolum, extreme base of the first segment of the abdomen, and its terminal segment, of a rich metallic golden green or blue: pro- and mesothorax, and the post dorsolum, the first segment of the abdomen, excepting as above, and the second segment, of a rich crimson red, sometimes obscured: legs green or blue; tarsi pitchy: wings slightly clouded: entire insect sculptured as in the preceding species: abdomen terminated by two lateral teeth, generally obsolete, and sometimes by four obsolete equidistant teeth.

This species is exceedingly common. I always find it in sand-banks, chiefly abundant where *Eryponne spinipes* abounds. I have not the least doubt the above authors have described this species under the above two names, and it stands in the Banksian cabinet, named by Fabricius, as his *Chr. bidentata*.

Sp. 7. *Chr. succincta*.

Linn. Sys. Nat. 947. 3.

Fab. S. E. 358. 8. *Sp. I.* 456. 10. *Mant.* 283. 12.

Ent. Sys. II. 241. 13. *Picz.* 174. 19.

Oliv. Ency. Méth. Ins. II. 574. 14. *Le Peletier*,
Ann. du Muséum, VII. 128. 24.

Panz. F. G. 77. 16. *Spin.* I. 64. 7. *Rossi*, Vol. II.
 8vo. 122. 846.

Of a metallic blue or green, splashed with gold: the dorsolum and abdomen of a rich crimson red, splashed with gold, especially the first segment; the terminal segment having four obtuse teeth; the central ones nearer together than to the lateral ones: tarsi pitchy: head and thorax rather coarsely punctured: the abdomen delicately so, and wanting the central, elevated, smooth line, conspicuous in the majority of the species of this genus: the prothorax has usually a couple of golden red spots in the centre of its anterior margin, above. (Length, 3 lines; expansion of wings, 4½ lines.)

The only localities I know for this very pretty species, is the sandy lane near Brockenhurst, in the New Forest, where

several of my friends have taken it, and Blackwater, on the borders of Berkshire and Hampshire.

Sp. 8. Chr. cyanea.

Linn. F. S. 1667. *S. N.* 948. 5.

Fab. S. E. 359. 11. *Sp. I.* 456. 14. *Mant.* 283.

12. *Ent. Sys. II.* 241. 13. *Piez.* 174. 19.

Olivier, Ency. Méth. Ins. II. 675. 19.

Latr. Hist. XIII. 238. 6. *Le Peletier, Ann. du Muséum, VII.* 128. 22.

Cuvier, Tableau Elémentaire, 502. 2.

Panz. F. G. 51. 10. *Schrank, F. B. II.* 2. 345. 2199.

Spinola, 1. 65. 12. *Rossi, Vol. II.* 8vo. 122. 845.

Donovan, Brit. Ent. Vol. VII. Pl. 235.

Entirely of a rich metallic blue or green, splashed with gold; occasionally obscure: head and thorax deeply punctured: abdomen delicately so, without the central, elevated, smooth, longitudinal line; the apex of the abdomen distinctly tridentate: the tarsi pitchy, and the flagellum of the antennæ black: the wings nearly hyaline, but very slightly clouded.

This species is common; but I have found it only on palings and worm-eaten trunks of trees.

SECTION II.—*The apex of the abdomen edentate.*

A. *Marginal cell complete.*

Sp. 9. Chr. cœrulipes.

Chr. cœrulescens. *Fab. Ent. Syst. Sup.* 357. 9. 10. *Coquebert,* 59. Pl. 14. Fig. 5.

Chr. cœrulipes. *Fab. Sys. Piez.* 173. 13. *Spin.* 1. 64. 5.

Chr. Leachii. *Stephens's Catalogue.*

Chr. cuprea. *Rossi, Vol. II.* 8vo. 126. 851.

Entirely of a rich crimson, with the exception of the metathorax, legs, and first joint of the antennæ, which are of a metallic blue or green: the flagellum of the antennæ, the tarsi, and nervures of the wings, are black: the wings themselves clouded: head and thorax coarsely punctured, and the abdomen delicately so. (Length, 5 lines.)

The only British specimen of this splendid insect is in the British Museum. I do not know its locality. It is a common species in the South of France and Italy.

Sp. 10. Chr. Leachii.

Face and occiput blue: vertex green: prothorax, mesothorax, and scutellum, of a rich golden red, with their sutures playing into a deep blue-green: metathorax blue: abdomen, with the first segment, of a golden green, playing into blue; the second and third, as far as its transverse ridge, of a rich golden red, with a central, elevated, longitudinal, blue line passing down the second; the apical portion of the third segment blue: the femoræ, tibiæ, and first joint of the antennæ, of a golden green; the flagellum of the latter black: the tarsi piccous: the wings hyaline: the head and thorax are deeply punctured, and the abdomen delicately so. (Length, 2 lines.)

This very beautiful species stands as *Chrysis nitidula*? in the collection of the British Museum; but Fabricius having described one by that name from America, I have altered it to the name of a gentleman, who deservedly stands high in the estimation of all naturalists, and especially of entomologists.

Sp. 11. Chr. Austriaca.

Fab. Piez. 173. 15. *Le Peletier, Ann. du Mus.* VII. 128. 28.

Chr. refulgens? . *Spinola, Ins. Lig.* I. 8. 4; II. 170. 16.

Very pubescent: head, several of the basal joints of the antennæ, above, thorax, legs, excepting the tarsi, which are black, either blue or green, variously intermingled, and occasionally splashed with gold: the wings subfuscous; the nervures piccous: post-scutellum and metathorax gibbous: abdomen edentate at its extremity, and of a rich golden red, varying in intensity and metallic refulgence; it is coarsely punctured, chiefly on the sides, with a central, smooth, longitudinal carina. (Length, 4—5 lines.)

This is apparently a rare species; in general external habit, it greatly resembles the larger specimens of the 1st and 2d *Vars.* of the *Chr. ignita*, and might therefore be easily mixed with that species unless the apex of the abdomen be examined. It has occurred in the vicinity of London; one of my own specimens was taken at Hampstead, and a second at Bexley, in Kent.

B. *Marginal cell open at its apex.*Sp. 12. *Chr. neglecta.*

Closely punctured: head, thorax, basal joints of the antennæ, and legs, excepting the tarsi, which are black, of a dull blue or green, or variously intermingled, and occasionally splashed with gold: wings subfuscous; nervures piceous: abdomen edentate at its extremity, very minutely punctured, of an opaque carmine colour, with a slight longitudinal elevation in the centre of its second segment. (Length, 3—3½ lines.)

This common and very distinct species appears to be undescribed; it may probably have been intermixed, or mistaken on the continent for the *Chr. Austriaca*, from which it considerably differs, not only in size, (for it is never more than half the size of that species,) but by its open marginal cell, and its very opaque abdomen. In British cabinets and catalogues, it has hitherto stood as the *Chr. rufa* of Panzer, which, however, is the *Hedychrum roseum* of Illiger's Rossi. It frequents sandy situations, and is very abundant, with the *Chr. bidentata*, at Highgate.

GENUS III.—EUCHRÆUS, *Latr.*

Head transverse, as wide as the base of the prothorax: thorax truncated anteriorly and posteriorly, with an acute tooth on each side of the metathorax, placed low: abdomen very convex above, consisting of three segments, the terminal segment having an elevated transverse ridge just before its apex, which is multi-dentate: superior wings with an incomplete marginal and first apical cell, and complete first and second discoidal cells; the radial nervure obtusely angulated, and that, as well as the subdiscoidal nervure, gradually terminating before reaching the extremity of the wing: legs moderate.

Sp. 1. *Euch. quadratus. Leach, MSS.*

Euch. sexdentata. Latr. Nouv. Dict. T. X. 529. (without his synonymes.)

Chrysis festiva? . Fab. Piez. 171. 3.

Entirely of a rich, refulgent, metallic green or blue: the flagellum of the antennæ black: the femoræ and tibiæ of a golden green: the

knees and tarsi piceous: the occiput, the centre of the mesothorax, the base of the second segment, and the entire third segment of the abdomen, of a beautiful blue, the latter serrated at its extremity, having thirteen teeth, the three central ones most distant from each other, the others smaller and closer together: head and thorax deeply punctured, the abdomen less so; the second segment having an elevated, central, longitudinal, smooth line: the wings slightly clouded. (Length, 4 lines.)

I know no locality for this beautiful and apparently very rare insect; the only British specimen I have seen is in the British Museum; it is said to have been captured by Dr. Leach. I have been obliged to reject every synonyme of the *Chr. sexdentata* of Fabricius and Panzer, as all mention six terminal teeth to the abdomen, Latreille only noticing its serration; but, as he calls it by a name evidently belonging to another insect, and not at all appropriate, I cannot do better than retain Leach's MS. name, under which it stands in the collection of the Museum. I quote Fabricius's synonyme with doubt, on account of the locality he gives, and yet I think it deserves retaining, as the species may be widely distributed, for I possess specimens from the Cape of Good Hope which perfectly correspond, differing only a little in size; but, if this doubt can be overruled, Fabricius's name must take the place of Leach's.

GENUS IV.—HEDYCHIRUM, *Latr.*

Head transverse: thorax oblong, quadrate, truncated at both extremities, the metathorax having a minute tooth on each side: abdomen consisting of three segments; in the first section, semi-circular, convex above; in the second section, more elongate, gibbous above, and marginate at its extremity: superior wings in the first section with a marginal cell nearly complete, the radial nervure which encloses it gradually terminating upon the superficies, before reaching the extremity; a first recurrent nervure, and incipient cubital, and the discoidal nervures, very slightly traced, but distinctly existing; the commencement of the subdiscoidal more strongly marked, but leaving the first apical cell incomplete; in the second section the radial nervure terminates very abruptly shortly after its commencement, and in some specimens a line of colour merely indicates its course, which also obsoletely

marks the course of the commencement of the cubital, first recurrent, and discoidal nervures, but which do not exist: whereas, by a singular irregularity, the subdiscoidal nervure is present, and tolerably strongly marked, but it does not extend to the apex of the wing: legs moderate.

The same observations apply here as those noticed under the genus *Chrysis*; but for the individual habits of the species, I must refer to the observations under their several descriptions.

SECTION I.—*Abdomen not emarginate.*

Sp. 1. Hed. regium.

Le Peletier, Ann. du Muséum, 7. 122. 4.

Chrysis regia . . *Fab. Ent. Sys. II. 243. 19. Piez. 175. 26.*
Coquebert, 60. Pl. 14. Fig. 8. Panz. F.
G. 51. 9. Spin. 1. 65. 11.

Id. punctatum, Leach. MSS.

The head and thorax very coarsely punctured; the abdomen more delicately so; a minute tooth on each side towards the base of the terminal segment: the head, first joint of the antennæ, thorax and legs, (except the tarsi,) of a deep blue, or green: the tarsi rufescent: the wings very fuscous: the abdomen of a rich carmine. (Length, 3—4 lines; expansion of the wings, 6 lines.)

There are several specimens of this insect distributed in cabinets; but I do not know any locality for it. The above is described from one of the specimens in the collection of the British Museum, in which the series varies from 3—4 lines.

Sp. 2. Hed. lucidulum.

Latr. Hist. XIII. 239. 2. Nouv. Dict. XIV. 255.

Le Pelet. Ann. du M. VII. 122. 9.

Chrysis lucidula . . *Fab. S. E. 358. 9. Sp. I. 456. 11.*
Mant. 283. 13. Ent. Syst. II. 242. 15.
Piez. 174. 21. Coquebert, 58. Pl.
14. Fig. 4. Oliv. Ency. Méth. Ins.
II. 675. 15. Spin. I. 64. 8. Rossi,
Vol. II. 8vo. 123. 847. Schrank, F.
B. II. 2. 344. 2198.

Id. fervida . . *Panz. F. G. 51. 6.*

The head, scape of the antennæ, scutellum, and metathorax, pectus, and legs, (excepting the tarsi, which, as well as the flagellum of the antennæ, are black,) of a rich green or blue: the dorsal portion of the pro- and mesothorax, of a refulgent red: head and thorax deeply and coarsely punctured; abdomen minutely so, with its apex much rounded. (Length, $2\frac{1}{2}$ —3 lines.)

This conspicuous and rare species is in several cabinets. I believe it has been caught in the vicinity of London.

Sp. 3. Hed. cœrulescens. *St. Farg.*

Le Peletier, Ann. du Muséum, VII. 122. 10.

Violacea?. . *Rossi, Vol. II. 8vo. 123. 848.*

Entirely of a beautiful blue, (excepting the flagellum of the antennæ and the tarsi, the former black, the latter piceous:) wings clouded: head and thorax coarsely punctured: abdomen delicately so. (Length, 2 lines.)

There are two specimens of this insect in the British Museum. I do not know any locality for them.

Sp. 4. Hed. ardens. *Curtis.*

Hed. nitidum? *Le Peletier, Ann. du Muséum, VII. 123. 12.*

Chrysis ardens? *Latr. in Coquebert, 59. Pl. 14. Fig. 7.*

The vertex of the head, dorsal portion of the pro- and mesothorax, the scutellum, and abdomen, of a vivid coppery red, under certain lights reflecting a greenish refulgence: the scape of the antennæ, face, anterior angles, sides, and pectus of the thorax, as well as the metathorax, and legs, (excepting the tarsi,) of a rich green or blue: tarsi, rufescent: flagellum of the antennæ, black: wings, slightly clouded: venter, black. (Length, $1-2\frac{1}{2}$ lines.)

I have occasionally found this species at Hampstead. The Rev. F. W. Hope has taken it in plenty at Southend; and the Rev. G. T. Rudd, in the New Forest. The specimens from the latter locality are invariably larger than all others that I have seen. I have always captured it settling upon sand.

Sp. 5. Hed. fervidum. *Fab.*

Latr. H. XIII. 240. 3. Le Pelet. Ann. du Muséum, VII. 122. 7.

Chrysis fervida. *Fieb. Sp. I.* 456. 12. *Mant.* 283. 14. *Ent. Sys. II.* 242. 16. *Piez.* 175. 23. *Oliv. Ency. Méth. Ins. II.* 675. 16. *Spin. I.* 64. 9.

The head and thorax very coarsely punctured ; the abdomen more delicately so, but more coarsely than in its congeners ; the abdomen very broad, and much rounded at its extremity ; the last segment having a minute tooth on each side towards the base : the vertex and dorsal portion of the pro- and mesothorax, with the scutellum, of a rich coppery green, intermingled with red : the face, legs, (excepting the tarsi, which are ficeous,) pectus, and metathorax, of an intense blue : wings very fuscous, especially towards their extremity : abdomen of a pinkish red, with a golden refulgence : the venter, black. (Length, 4 lines.)

This splendid species, which has been taken three times at Wandsworth, by my friend, W. W. Sanders, Esq. (to whose liberality I am indebted for my specimen,) is the largest British one I am acquainted with. There is a specimen in the British Museum, but I am unacquainted with the place of its capture.

Sp. 6. *Hed. roseum.*

Chrysis rosæ, Rossi, Fauna Etrusca, T. II. ed. 8vo.

Le Peletier, Ann. du Muséum, VII. 123. 13.

Chrysis rufa Praz. F. G. 79. 16.

Head and thorax very coarsely punctured ; abdomen delicately so : head, scape of the antennæ, thorax, and legs, (excepting the tarsi, which are piceous,) green or blue, occasionally splashed with gold : the scutellum frequently golden : the wings hyaline ; the apex with a broad fuscous band : the abdomen testaceous or carneous, sometimes darker towards its apex, which is much rounded, and it has occasionally a violet reflection.

This very pretty insect, which I had the pleasure of introducing to the British Fauna, occurs in abundance at one particular spot on Hampstead Heath, where I captured it settling on the sand. I have for hours endeavoured to trace its habits, but in vain ; all that I have been able to observe is, that it alights on the ground, runs a few inches, turns round, and flies off again. I have not been able to find whence it comes, or whither it goes ; it may probably be parasitic upon *Tachytes pompiliformis*, or *Gorytes tumidus*, for I have

sometimes lost it amongst the short grass at the roots of furze, whither I have also traced these insects. I took a solitary specimen at the beginning of August, on the umbels of the *Pastinacca*, at Birch Wood, in Kent.

SECT. II. *Abdomen gibbous, and emarginate nervures abruptly terminated.*

Sp. 7. *Hed. auratum.*

Latr. Hist. XIII. 239. Le Pelet. Ann. du Mus. 7. 12. 1.

Chrysis aurata . . . *Linn. F. S. 1666. S. N. 948. 4.*

Id. id. . . . *Fab. S. E. 359. 10. Sp. I. 456. Fig. 13.*
Mant. 284. 16. Ent. Sys. 242. 18.

Id. id. . . . *Piez. 175. 25. Olivier, Ency. Méth. Ins. II. 675. 18.*

Id. id. . . . *Panz. F. G. 51. 8. Rossi, 8vo. V. 11. 121. 844.*

Id. id. . . . *A. Schrank, F. B. II. 2. 345. 2200.*

Head and thorax very coarsely punctured; the abdomen extremely minutely: the terminal segment much acuminate, and the entire abdomen very gibbous: the head, basal joints of the antennæ, legs, excepting the four last joints of the tarsi, which are piceous, and venter of a rich blue, or green, sometimes, but rarely, with some golden splashes: the abdomen of a very vivid and fiery red, the disc of its dorsal portion not unfrequently æneous or black. (Length, $1\frac{1}{2}$ —3 lines.)

This is doubtlessly the most common species of the genus. It is generally found settling upon the leaves of shrubs, and, like its congeners, generally rolls itself up into a ball upon the approach of danger, and thus, unexpectedly falling, it contrives to escape. I found it common in July, on the umbels of the parsnip, and upon a currant-bush infested by an aphid in a market garden in Battersea-fields; to the latter it doubtlessly resorted for the honey secreted by the aphid.

Sp. 8. *Hed. bidentulum.*

Le Pelet. de St. Fargeau, An. du Mus. VII. 121. 3.

Hed. imperiale . . . *Leach, MSS. Stephens, Catalogue. 391. 5283. Curt. Guide. 657. 5.*

- Chrysis ænea? . . . *Fab. Mant. I. 284. 15. Ent. Syst.*
 II. 242. 17. *Picz. 175. 24.*
Panz. F. G. 51. 7.
 Omalus nitidus? . . . *Panz. F. G. 97. 17.*
 Hedychrum nitidum? . . . *Spin. II. 170. 15. 1*
 Id. æneum? . . . *Ib.*
 Chrysis cœrulea . . . *Dahlbom. Excercitationes Hy-*
menopterologicæ P. 33. 17.

Var. 1. (Imperiale.) Entirely of a deep dark blue or purple, with the exception of the flagellum of the antennæ and the tarsi, which are black: the venter green: the wings edged with a broad fuscous band: the head and thorax very coarsely punctured: the abdomen more delicately, and very gibbous; the latter pubescent, especially the last segment, which is also much acuminate. (Length, $3\frac{1}{2}$ lines.)

Var. 2. (Bidentulum.) Of a brilliant bluish green, excepting the disc of the abdomen, which is of a shining blackish green, punctured, and the form of the entire abdomen similar to the preceding, but not more than two-thirds of its size, and not at all pubescent: the antennæ, wings, and legs, as in the preceding. (Length 1—2½ lines.)

Var. 3. (Viride.) When alive entirely of a brilliant green; it differs from the preceding in the green not having a blue tinge; after death, the head and thorax change to a deep blue green, and the disc of the abdomen becomes black: the punctures as in the last, and, like it, it wants the pubescence of the first variety, but the wings, antennæ, and legs are similar, but it differs in the terminal segment of the abdomen being much more rounded, and the abdomen itself not so gibbous. (Length, $1\frac{1}{2}$ — $2\frac{1}{4}$ lines.)

Var. 4. (Ænea.) Entirely of a dark æneous tinge, nearly black : in sculpture and in the form of the abdomen, it resembles *Vars. 1* and *2*, as also in its legs, wings, and antennæ : from *Var. 2* it differs only in colour. (Length, 2 lines.)

Var. 1, of which I have one specimen only, was taken at Bexley, by Mr. Bainbridge, who kindly gave it to me; it stands in the cabinet of the British Museum as the *imperiale* of Leach; it is certainly *Var.* 2 of the *Chrysis cœrulea* of Dahlbom. *Vars.* 2 and 3, I have taken in Battersea-fields; *Var.* 2 appears to be the *bidentulum* of St. Fargeau; *Var.* 3 I have called *viride*, from its colour when alive; and I have

Hero, not uncommon in cabinets.

Arcanius, not uncommon in cabinets.

Spini.

Chryseis. In every collection of any importance, either in town or country; sometimes a whole series of males, females, and undersides, being displayed; to be purchased abundantly of dealers, at a price seldom exceeding one shilling for a specimen.

Hippothoe. Introduced as *dispar*?

Virgauria. In every collection; I have seen nearly a thousand of this species, said to be British; fine recent specimens, said to be taken last year (1835), may be purchased abundantly, and at a very low price, of many dealers. I am not aware that a single syllable, even hinting at a capture of this insect in Britain, has ever been written.

Dorylas, *Icarius*, *Eros*. Those described under these names varieties of *Alexis*? or intended as recording the capture in this country of the species so named on the continent?

Titus, *Malvæ*, *Oileus*, *Sylvius*, *Bucephalus*, *Vitellius*.

Can any of your correspondents oblige the writer of this article with any information on either of the above-mentioned species, or with any positive fact relative to the capture of any butterflies, with the exception of the sixty-five following:—

Machaon, *Rhamni*, *Electra*, *Hyale*, *Brassicæ*, *Rapæ*, *Napi*, *Daphidice*, *Cardamines*, *Sinapis*, *Cratægi*, *Lucina*, *Athalia*, *Artemus*, *Cinxia*, *Dia*, *Selene*, *Euphrosyne*, *Lathonia*, *Adippe*, *Aglaia*, *Paphia*, *C. album*, *Polychloros*, *Urticæ*, *Io*, *Antiopa*, *Atalanta*, *Cardui*, *Iris*, *Camilla*, *Ægeria*, *Megæra*, *Semele*, *Galathea*, *Tithonus*, *Janira*, *Blandina*, *Cassiope*, *Hyperanthus*, *Davus*, *Pamphilus*, *Betulæ*, *Pruni*, *W. album*, *Quercus*, *Rubi*, *Phleas*, *Dispar*, *Argiolus*, *Alsus*, *Acis*, *Arion*, *Corydon*, *Adonis*, *Alexis*, *Argus*, *Agestis*, *Alveolus*, *Tages*, *Pariscus*, *Linea*, *Actæon*, *Sylvanus*, *Comma*.

The above-named sixty-five butterflies I consider unquestionably British; and of this number, *three* have been introduced since the publication of that portion of Mr. Stephens's "Illustrations," in which they would have occurred. These are *Dia*, on the authority of Mr. Weaver; *Pruni*, on the authority of Mr. Seaman; and *Actæon*, on the authority of Mr. Dale

Fig. 1.

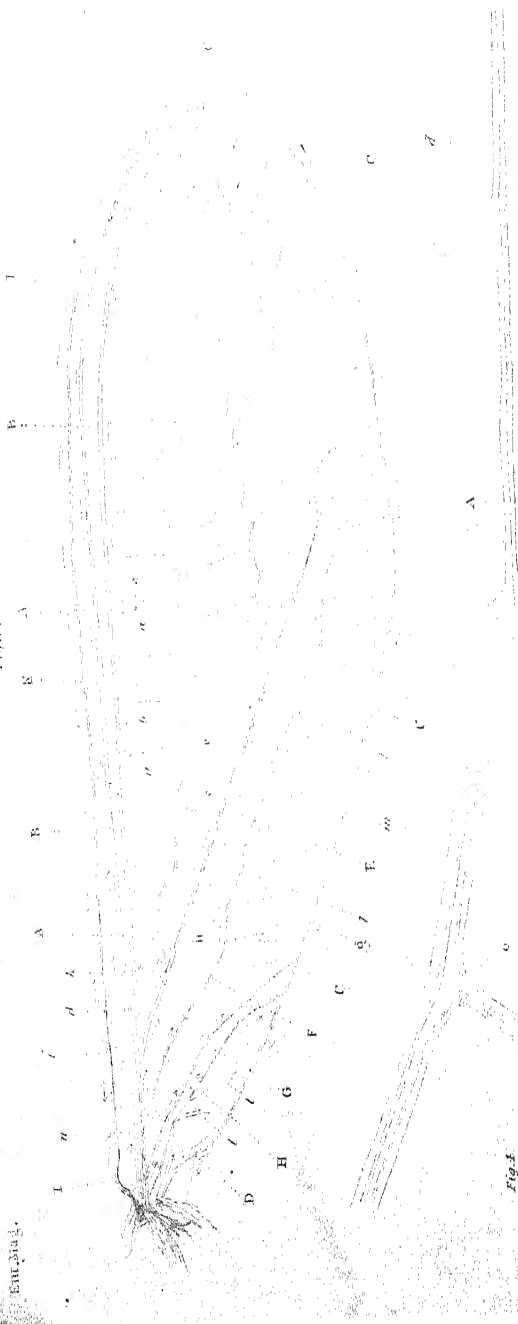


Fig. 2.



Fig. 3.



But it must be observed that, although specimens unquestionably British of all these sixty-five insects do exist, yet the majority of the rarer ones, as *Daplidice*, *Lathonia*, *Antiopa*, &c., although exhibited as British, are decidedly and evidently exotic: the three last-named species may be purchased for a mere song. In order that I may not offend gentlemen possessing rich series of the questionable species, I subscribe myself simply,

INQUISITOR.

ART. XXII.—*Observations on the Circulation of Blood and the Distribution of the Tracheæ in the Wing of Chrysopa Perla.* BY J. S. BOWERBANK.

(For the references see Plate XV.)

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—You did me the honour of inserting in an early Number of the Entomological Magazine, the result of a series of observations on the circulation of the blood in the larva of *Ephemera marginata*; and I regret much that other occupations have prevented me from following up those researches with that degree of attention which so interesting a subject demands. I have, however, occasionally, as opportunities occurred, examined such adult insects as I imagined were likely to enable me to proceed with the subject, and more particularly those whose wings I considered would form favourable subjects for investigation, but without arriving at any very satisfactory results until lately. A few evenings since, while strolling with some friends in the cool of the evening, in my garden, I was requested by one of them, who had taken a fine specimen of the *Chrysopa perla*, to place it beneath the microscope, that he might gratify himself by viewing its extremely brilliant eyes. After having pleased ourselves for some time, by examining these beautiful objects, I could not resist the inclination I felt to take a passing glance at the wing, whose transparency, I thought, might enable me to observe some traces of the circulation; and, to my great delight, I saw globules of the blood rushing with rapidity through the two large canals of the under wing. As, however, I had unfortunately grasped the thorax of the insect with the forceps, life very shortly became extinct, and with it

terminated my expectations for that evening. But I had seen enough to assure me that I might now, with every reasonable prospect of success, expect to attain the long wished-for object of my researches; I mean, a view of the course of the circulation in the adult insect. On the following day I was fortunate enough to procure several specimens of *C. perla*. I immediately commenced upon one of these, by fixing it with a little thick gum-water upon its back, upon a small slip of glass, and having extended its wings as nearly at right angles to its body as I could place them, I retained them in this position by a small drop of gum-water under the tip of each, leaving the intermediate spaces of the wings quite free. I am thus particular in the description of my proceedings, as it will be seen hereafter that my great care in thus stretching the wings was most probably the occasion of much vexation and loss of time. When I sat down to the instrument, I was gratified beyond measure by seeing the particles of the blood flowing with considerable rapidity from the proximal end of the wing towards its opposite extremity, through the large canal *A*, and with equal rapidity through the canal *B*, from the distal point of the wing towards the proximal; and was congratulating myself upon having the satisfaction of observing, at one view, the course of the circulation through canals, which might be considered as equivalent to artery and vein, when all at once, to my great surprise, the blood in the supposed vein *B* commenced flowing in the opposite direction; while that in the canal *A* was stationary for several seconds, and then again flowed forward in the same direction as before, at the same time a series of oscillations, of a very singular description, took place in the canal *B*. I must here state, that the power used in making these observations was 230 linear, and the field of view was equal to $\frac{1}{25}$ of an inch in diameter. In this exceedingly minute portion of the canal *B*, a number of oscillations of the same globules occurred, in one instance for 21 times, before I lost sight of them, in consequence of the struggling of the insect giving fresh impetus to the blood. In another instance, 84 oscillations took place before the group of globules, upon which my eye was fixed, quitted the field of the microscope. These oscillations seldom exceeded half the length of the field, or $\frac{1}{50}$ of an inch, and were extremely irregular in the time of their occurrence; sometimes the motion of the globules was most rapid when the blood

was flowing towards the distal point of the wing; at other times, when it passed in the opposite direction. Occasionally, two or three oscillations followed each other with considerable rapidity, while at other periods the alternations were comparatively slow and irregular; but the general average was at the rate of about 20 in two minutes. Being thus foiled in determining the proper direction in which the blood flowed in the canal *B*, I mounted another of the insects in a like careful manner, and was much mortified to find the result of my second examination, after several hours' careful observation, so similar in every respect to the first, as to leave me still undecided as to the true course of the blood in the canal *B*. The only certain result I gained was, that the proper motion of the blood in the canal *A* was from the proximal towards the distal extremity of the wing. The weather on the following days was wet and cold, and we did not succeed in capturing any fresh insects; I therefore continued my observations on those I had remaining, but which became so languid as to allow me to gain very few fresh results, beyond that of detecting a solitary globule slowly winding its way through some of the small canals of the wing, near its centre; but this was something. I now confidently expected, if I could but secure some fresh insects, I might yet succeed in satisfying my doubts, and in determining the true course of the blood in the canal *B*, which the before-mentioned circumstances had rendered very uncertain. Fortunately, the evening of the following day produced me another specimen, and I addressed myself to the task of preparing it for observation, and profiting by my previous failures; after having fixed the back of its head, thorax, and abdomen, firmly to the glass, I separated the under wings just so far from the body as to allow me to see distinctly the whole of their surface, slightly fixing them by a small speck of gum-water beneath each tip—and by these means I avoided that unnatural strain which was the consequence of their former position, and which had been so detrimental in my former attempts. I was now amply repaid for my care. I at once perceived the globules of the blood flowing steadily forwards towards the distal extremity of the wing, not only in the canal *A*, as before mentioned, but also in the canal *B*, in which its course in my former observations appeared so ambiguous. I was now able clearly to trace the progress of the blood in both canals, from near the proximal

to the distal point of the wing, where it was discharged into the great incurrent canal *C*, which, as may be seen in the figure, passes in one unbroken line from the distal extremity of the wing, until it arrives at the point *D*, near the proximal extremity, where it divides into two branches before entering the body of the insect. This canal I believe to be the only incurrent one in the wing, as upon a careful examination of the canals *EFGH*, Fig. 1, near their origin, I perceived at each spot, where an arrow is placed, the globules flowing in the direction to which they point, pursuing their course in a direct line along them, as indicated by the straight arrows, or quitting the larger ones, and passing, as indicated by the curved arrows *llll*, Fig. 1, into the small lateral branches. In a similar manner I saw the globules quit the large canal *B*, and flow in the direction of the curved arrows at Fig. 1, *a a*, through the small branches *b c*; and in many other cases I detected single globules struggling through these small transverse canals, sometimes gliding slowly forward, while at other times they were stationary for a considerable period, but always while in motion progressing towards the incurrent canal *C*. In the upper marginal canal *I*, marked with double-headed arrows, the blood oscillated so continually and equably, that I could not determine from the motion of the globules its proper direction; but from its position, and the direction of the lateral canals connecting it with the great one *B*, I think I may be warranted in considering it as an excurrent one, particularly as the quantity and character of the motion of the blood contained in it differed so materially from that in the canal *C*, for while the motion of the blood was of such an indeterminate character in the former, it was rushing steadily through the latter with a rapidity greatly superior to that of any other canal, and this we may conclude would naturally be the case, as the canal *C* appears to be the sole incurrent canal for the whole of the blood flowing through the two large canals *A B* and their branches.

The blood in its progress through the principal canals, *A* and *B*, presents some singular features. While it was flowing in a steady, continuous stream in the latter, it frequently occurred that it would either ebb with considerable rapidity in the former, for several seconds, or in the place of ebbing, would oscillate for a similar period, and then resume its natural course towards the distal extremity of the wing, but its velocity at no time appeared to be quite equal to that in the canal

B, nor was it of equal steadiness, for in this latter canal, any reflux or interruption to its progress was comparatively rare.

On first viewing the circulation of the blood in these canals, I imagined I perceived an irregular pulsation, but am now inclined to think no such motion exists naturally in the wing, but that the proper flow of the blood is in a steady, uniform stream. This apparent pulsation I think may be attributed to momentary obstructions, which the large elongated globules meet with in their progress through their comparatively small channels, as in several instances I observed a sudden stoppage of the circulation, and consequent accumulation of globules within the range of the field of view, which was followed by an equally rapid disengagement upon the blood resuming its course; slight struggling of the insect likewise produces momentary interruptions very similar to pulsations.

Within the whole of the excurrent canals, branches of the trachea are seen that in the canal *A* is comparatively small compared with the like vessel in the canal *B*. Upon measuring these canals and the trachea contained within them, I found the former at the point *d*, Figs 1 and 2, to be $\frac{1}{408}$, and its trachea $\frac{1}{9200}$ of an inch in diameter, while the diameter of the latter was $\frac{1}{500}$, and of its trachea $\frac{1}{1340}$. Upon examining the wings of several other specimens of the insect, I found the same disparity in the proportions of the trachea to the canals to exist in the whole of them, and this also appears to be the case on the corresponding canals of the upper wings, which have hitherto been but slightly examined, the under wing having been selected as preferable for examination on account of its superior delicacy and transparency.

The trachea in the canal *A*, throughout nearly the whole of its course, runs in a straight line along the anterior part of the cavity which contains it, as at Fig. 2, *A*, and lessens gradually in diameter, until at the termination of that canal it can no longer be traced in consequence of its extreme tenuity. Near its proximal extremity it gives off a small branch to the transverse canal *n*, which terminates in a fine point at its junction with the canal *I*; excepting in this instance, I could not, after a careful examination, detect any other branch given off from it to the transverse canals which connect it with the canal *I*, although from its position in the canal *A* we might naturally be led to suspect that was the case; for, although these small transverse canals, throughout nearly their whole

length, were so opaque as not to allow of their internal cavity being examined, yet at their junction with the canal *A* they were so far transparent as to allow of the branch of the trachea being seen had it been present, neither did the trachea in the canal *A* curve towards the mouths of the transverse canals, as it usually does when it gives off a branch. The trachea in the canal *B*, unlike that in canal *A*, pursues an exceedingly tortuous course, with very little diminution in its diameter for about three-fourths of its length; it then gradually decreases in size until it reaches the distal extremity of the canal *B*, when it becomes so slender as generally to elude observation. In its progress it gives off a branch to the canal *E*, at its origin *i*, Fig. 1; which, shortly after its entrance into that canal, divides into two parts; one of these branches passes at *k* into the canal *K*, Fig 1. Here the trachea is very large in proportion to the space containing it, filling up at least three-fourths or four-fifths of the cavity, and giving off small branches to each of the posterior transverse canals; which canals appear, in every wing I have examined, to receive the branch of the trachea destined for their use from the trachea of the large canal immediately above them, and in no instance that I have observed from that belonging to the one beneath them. These fine branches, which pass through the small transverse canals, do not enter the trachea, which runs through the large longitudinal one beneath them, but usually terminate in a fine point at the spots where the transverse canals join the longitudinal ones beneath; sometimes instead of terminating at the junction of the two they run for a short distance into the large longitudinal one; and in one instance, *g*, Figs. 4 and 1, I observed that the trachea divided at the spot where it usually terminates, into two branches, which after running for a short distance along the canal *C*, the one towards the distal, and the other towards the proximal extremity of the wing, then terminated in the usual manner in a fine point. Generally speaking each canal contains but one branch of the trachea, and in the large ones, *A* and *B*, I believe this to be universally the case, but in one wing in the canal *E*, Fig. 1, at the point *m*, and in *F*, Figs. 1 and 4, at the point *b*, I observed two branches in each, and in one instance in the latter, as many as three branches; and indeed, in this canal, the trachea seems to be more subject to divide into separate branches than in any other in the wing. In the upper marginal canal *I*,

I did not succeed in tracing any branch of the trachea, neither could I in any part of the incurrent canal *C*, although I could readily perceive the terminations of these vessels in the canal *B*, where it enters the incurrent one *C*, and of the branches which run down the small transverse canals, and discharge their contents into it throughout its whole course.

The tracheæ, in their passage through the large canals, seldom pursue a straight course, but run in a serpentine direction, as represented at *B*, Fig. 2, through the space containing them, and frequently at the spots where they give off branches to supply the transverse canals, they curve so much as to drop in the form of a loop within its mouth, as at Fig. 3, *e f*, which is a magnified representation of *e f*, canal *K*, Fig. 1, and likewise as at *o*, Fig. 4, which is an enlarged view of the transverse canal *h g*, connecting canals *F* and *C*, Fig. 1.

During the course of these observations, I have used every endeavour to discover, if possible, whether the blood had proper vessels, or only occupied the internal cavity of the canals; the latter I am convinced is the case, as I could frequently perceive the particles not only surrounding all parts of the tracheæ, and occupying the whole of the internal diameter of the canals, but it frequently happened that globules experienced a momentary stoppage in their progress, occasioned by their friction against the curved surface of the tracheæ, which sometimes gave them a rotatory motion.



THE BULL INN, BIRCH WOOD CORNER.

ART. XXIII.—*Proceedings of the Entomological Club.*

SITTING OF THE 15th SEPTEMBER, 1836.

Present,—Messrs. Bevington, Bennett, Bowerbank, J. F. Christy, Alex. Christy, Davis, Hanson, Hoyer, Ingall, Stanger, Trusted, and Newman.

Mr. J. F. CHRISTY in the Chair.

After the minutes of the last meeting had been read, a discussion of considerable length took place, touching the propriety of the appointment of Trustees, agreeably to the tenth law, as agreed to at the last meeting. A legal opinion had been taken as to the necessity of the appointment of Trustees previous to an insurance on the property of the club being effected; which opinion was unfavourable to such appointment, on account of the great expense of a deed of trust; stating also, that no additional security would be afforded thereby. The propriety of forthwith insuring the property of the club, the office in which to insure, and the amount to be insured, were then considered; and the decision of the club on all these points was embodied in the following resolution, which was carried unanimously:—

That the CURATOR be directed to insure the property of the club in the Sun Fire Office, in the names of the members conjointly, to the following amount:—

Museum and glass	£600
Cabinets, furniture, &c.	150
	<hr/>
Total	£750

The CURATOR read the following list of donations to the club:—

Mr. BENNETT. The whole of his collection of insects.

Mr. BEVINGTON. The whole of his collection of insects.

Mr. BOWERBANK. The whole of his collection; being some exceedingly valuable New Holland insects, and some British Crustacea.

Mr. J. F. CHRISTY. A handsome mahogany cabinet, of forty drawers, each 18 inches square; together with his whole collection of insects.

Mr. DAVIS. The whole of his exotic insects, and numerous rare British ones.

Mr. HOYER. The whole of his collection of insects.

Mr. NEWMAN. The whole of his collection of insects.

Mr. WALKER. An immense collection of British and exotic insects.

The EARL of MOUNTNORRIS. Some rare exotic *Crustacea*.

Mr. WILLIAM CHRISTY, jun. of London. The whole of his collection of British and exotic insects, with the exception of the British *Lepidoptera*. Also, the following books :—Dejean's "Catalogue des Coléoptères," 4 Nos.; Wilson's "Entomologia Edinensis;" Kirby's "Century of Insects;" Stephens's "Nomenclature."

Mr. EDWARD DOUBLEDAY, of Epping. Numerous valuable British and exotic Coleoptera, including an unquestionably British specimen of *Melolontha fullo*, recently taken.

Mr. INGALL, of London. His whole collection of exotic insects and British Arachnoida, and a large number of British insects of all classes. Also, the following books :—"Transactions of the Entomological Society," 1 vol.; Geoffroy's "History of Insects," 2 large vols. 4to. with numerous plates.

Mr. BENTLEY, of London. His whole collection of exotic and numerous rare British insects.

Mr. CHANT, of London. His whole collection of exotic and numerous rare British insects.

Mr. MUNBY, of Edinburgh. A collection of French insects.

Mr. WALTON, of Byard's Lodge, near Knaresborough. Various British *Curculionites*.

Mr. GEORGE NEWMAN, jun. A splendid series of African species of the genus *Cetonia*.

Mr. ROBERT FOSTER, of London. An immense number of British insects, collected principally at Leominster, Hastings, and Mickleham.

Mr. GEORGE TRUSTED, of Ross. His whole collection of insects, being principally Scotch and French.

Mr. HENRY METFORD, of Stoke Newington. A collection of French insects.

Mr. J. V. THOMPSON. Some rare exotic *Crustacea*.

Mr. JOSEPH EVELEIGH, of Manchester. Remarkably fine specimens, of *Apatura iris*, *Carabus arvensis*, *Saperda scalaris*, *Ægeria bembeciformis*, and other rare British insects.

Mr. HENRY NEWMAN, of Liverpool. Some rare British Crustacea.

Mr. SAMUEL ALEXANDER BURLINGHAM, of Worcester. A collection of rare British *Crustacea* in a high state of preservation, also numerous British insects of all classes.

Mr. WILLIAM SPRIGGS, jun. of Worcester. Some rare British *Libellulidae*.

Mr. WILLIAM ENOCH, of Hay. Some rare British *Crustacea*.

Rev. Mr. AINGER, of Greenwich. British *Arachnoida*.

Mr. J. BOND, of London. Some rare British *Cerambycites*, in a high state of preservation.

Mr. ALEXANDER CHRISTY, of London. Some beautiful *Lepidoptera*, from Jersey.

Mr. ROGERSON, of the Royal Observatory, Greenwich. Some living specimens of the larva of the common glow-worm, just hatched from the egg, and about a line in length: these little creatures are distinctly luminous, and Mr. Rogerson states that the egg also is luminous: (the glow-worms were on the table for inspection).

Mr. J. C. LOUDON, of London. The 65th number of the Magazine of Natural History.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the club.

Mr. BENNETT exhibited a splendid collection of Brazilian insects, consisting of nearly 1000 specimens of all classes, and in the highest possible state of preservation. Mr. Bennett announced that he had purchased this beautiful collection for the purpose of presenting it to the Entomological Club. The announcement was received with great applause, and it was

Resolved Unanimously,

That the thanks of the Club be given to Mr. Bennett, for his superb donation.

After the nomination of two gentlemen as honorary corresponding members, the Chairman made some observations on the necessity of limiting the number of members as much as possible, and using great caution in the nomination of new ones;

his observations had no reference to the gentlemen now nominated, but he thought if the Club became very large, there would be a difficulty in entertaining its members in the present way, and if that difficulty ever occurred the present social character of the club would be in a great measure destroyed.

Mr. BOWERBANK and Mr. DAVIS took a different view of the subject; it was suggested that if the club had honorary members in every county it would tend to its general benefit, and that even supposing this to be the case, the average attendance of honorary members at each meeting of the club would not amount to half a dozen, a number which every member of the club would feel gratified in entertaining.

The Chairman said that his observations had reference solely to honorary members residing in the neighbourhood of London, the number of whom he hoped would not be very large.

Mr. NEWMAN agreed in the view of the subject taken by the Chairman, but thought it still necessary there should be some honorary members resident in London, from amongst whom to recruit any defalcation in the number of the regular members, agreeably to the fourth law.

The club then adjourned to Thursday evening, the 20th of October, at Mr. Bennett's, 48, Cannon Street.

ART. XXIV.—*List of Captures at Lyndhurst and Ryde.*

By SIR JOHN LIGHTON and the Rev. G. T. RUDD.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

DEAR SIR,—If you have a corner to spare, and think the inclosed Lists of Captures, by my friend, Sir John Lighton, and myself, of interest, will you oblige me by their insertion? I hope to have sufficient leisure to prepare descriptions of what I consider new genera of *Staphylinidæ*, and for the favour of your notice in a future Number of your Magazine.

I am, dear Sir, truly yours,

G. T. RUDD.

YARM, Sept. 10, 1836.

*List of a few of the Insects captured by the Rev. G. T. Rudd,
at Lynthurst and at Ryde, during July and August, 1836.*

COLEOPTERA.

Cicindela Germanica, R.
Zabrus gibbus, R.
Anthicus humilis, R.
Mordella pumila, R.
 variegata, R.
 fasciata, R.
Abdera bifasciata, R.
Three very distinct new genera
 of *Staphylini*, R.
Cucujus unifasciatus, L.
 a n. s. (?) R.

HYMENOPTERA.

Astata boops, L.
Tachytes pompiliformis, L. R.
 unicolor, L. R.
Pompilus rufipes, R.
Alyson Kennedii (both
 sexes), R.
Nysson 3-maculatus, R.
Elampus Panzeri, L.
Chrysis succincta, L. common.
Plancus apicalis, R.
Elasmus.
Rhopalum tibiale, R.
 rufiventre, R.

R. Ryde.

L. Lynthurst.

It is, I believe, doubtful how far *A. Kennedii* is distinct
from *A. spinosus*.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—The following butterflies and moths have come under
the notice of my brothers and self, during the past summer,
in the immediate vicinity of Ryde, Isle of Wight.

I remain, Sir, your obedient servant,

J. W. LIGHTON.

RYDE, Sept. 10, 1836.

Colias hyale.
Leucophasia sinapis.
Pieris crataegi.
Melitæa cinxia.
 seline.
Argynnis paphia.
Vanessa polychloros.
Cynthia cardui.
Limenitis camilla.
Hipparchia galathea.

Thecla quercus.
Polyommatus argiolus.
Smerinthus populi.
Macroglossa stellatarum.
Ægeria ichneumoniformis.
Lasiocampa quercus.
Psilura monacha.
Arctia villica.
Agrotis ocellina.
Catocala nupta.

ART. XXV.—*Pith of the Periodicals.*

WE once plumed ourselves pretty considerably on being an editor; it was something a little above the common, a little select; but now, forsooth, the tables are turned, and it is equally select not to be an editor. The whole world of naturalists are now editors. Every one who can string ten lines together must announce himself as the editor, or the half-editor, or the third-part editor, or the quarter-editor, of some magazine, designed to teach the science of natural history. Our table, positively, groans with Transactions of Zoological, Natural History, Entomological, &c. Societies, with Naturalists, and Field-Naturalists, and Zoological Magazines, and Magazines of Zoology, and Natural History Magazines, and Magazines of Natural History, *et genus id omne*. Whither, whither will the mania carry us at last! But, oh! the partnership editorships! Oh! the strings of editorial names, with tails longer than those of the comet or O'Connell. We have "registered a vow in" the Firefly, never again to criticise an entomologist;—fear not, therefore—piracy, put on thy most unblushing front; quackery, rejoice; dulness, resume thy helm; stupidity, thy reign. It is with the determination of finding something to admire, something to commend, that we have turned over the mass before us, and we find the following:—

1. *Natural History of the British Entomostraca*, by WILLIAM BAIRD, Surgeon.^a

The appearance of the *Entomostraca*, insects inclosed in a shell, is enough to excite curiosity; numbers of them are so like shells that an uninstructed person would so consider them, and this singularity of structure has suggested their name, derived from two Greek words, signifying "an insect" and "a shell;" a name given by Müller, and since retained. Before Müller's work, all the *Entomostraca* were comprised in one genus, called *Monoculus*, from its being supposed they possessed but a single eye. Linnæus, in his "*Systema Naturæ*," describes nine species of *Monoculus*. Seven others were figured by Joblot, Baker, Frisch, Geoffroi, and Ledermüller, and a few added by Stroem, Goeze, and Herbst. Degeer describes and figures accurately seven species; he appears to have been aware of the transformations of *Cyclops*, figuring and

^a *Ibid.* Magazine of Zoology.

describing the young, but not tracing them to their final state, which Rhamdohr and Jurine have since done. Leeuwenhoek, Swammerdam, and Schæffer, give some details respecting these insects; but it is to Müller we are chiefly indebted. He collected in one memoir, and arranged into genera and species, not only those previously known, but added a number of new species found in the fresh waters of Denmark and Norway, and gave many important and interesting details respecting them. Although Müller has subsequently been detected in some errors, his work, published in 1785, is a most interesting and valuable memoir. The memoirs of Straus, on *Daphnia* and *Cypris*, are exceedingly perfect, and Jurine (fils), Daudebart de Ferussac (fils), Adolphe-Brogniard, Hermann (fils), and Prevost, Milne, Edwards, and Andouin, have each further extended our knowledge of these animals.

With the exception of Dr. Leach, British naturalists have done little for the *Entomostraca*: this author, in the Edinburgh Encyclopædia, enumerates sixteen British species. Samouelle increases these to twenty, and at about this number the catalogue remains at the present period.

The natural arrangement of *Entomostraca* has been disputed by naturalists. Desmarest gives a view of all arrangements of them, previous to his own. Latreille, in his "Cours d'Entomologie," gives the following arrangement of *Crustacea* generally:—

(MALACOSTRACA.)

First Division—CRUSTACEA MAXILLOSA.

<i>First Order</i>	DECAPODA.
<i>Second</i>	STOMAPODA.
<i>Third</i>	LCOMODIPODA.
<i>Fourth</i>	AMPHIPODA.
<i>Fifth</i>	ISOPODA.
<i>Sixth</i>	DICLAPODA.

(ENTOMOSTRACA.)

<i>Seventh</i>	LOPHIYROPA.
<i>Eighth</i>	OSTRAPODA.
<i>Ninth</i>	PHYLLIPA.
<i>Tenth</i>	TRILOBITES.

Second Division—CRUSTACEA EDENTATA.

<i>Eleventh</i>	XIPHOSURA.
<i>Twelfth</i>	SIPHONOSTOMA.

Of the Entomostracous orders he gives the following characters :—

ORDER.—LOPHYROPA.

From the observations of Rhamdohr, &c. it appears that the last pair of thoracic feet in these *Entomostraca* correspond with the third pair in the *Amphipoda* and *Isopoda*, and to the first pair in the *Decapoda*. According to Jurine, the number of thoracic feet is eight, but we observed, from the succession of the appendages which precede them, that those which he has designated by the name of *hands* answer to the second pair of maxillæ, and therefore the three anterior pair of feet, properly so called, represent as many foot-maxillæ (*pieds-machoires*.) The genus *Daphnia* has, according to Straus, ten feet, of which the two first answer to the second pair of maxillæ.

First family.—*Seticera*. The thorax is more or less oval, and divided into four segments, of which the anterior is much the largest, and includes the head, and presents anteriorly and centrally the organ of vision. The superior antennæ are long, setaceous, simple, and composed of numerous minute articulations. The inferior antennæ are short, filiform, and simple, or forked; they seem to have but four articulations. Each mandible bears a feeler, which is sometimes entire, at others divided into two branches. Immediately behind the organs, answering to the superior maxillæ, are five pair of feet, divided into two cylindrical branches, more or less furnished with hair. The tail is composed of six rings, with two spears and bristles at the extremity. Under the first, we observe in the female two appendages, in the form of feet; and under the second, in both sexes the organs of generation, and two oviferous pedunculated sacs. Genus, *Cyclops*.

Second family.—*Cladocera*. Head large, projecting, often terminating below in a beak-like point, and bearing superiorly an eye varying in size, preceded in some species by an oculiform black spot, and having at its junction with the thorax an antenna always projecting, commonly very large, in the form of an arm, and serving as an oar; it is divided into two or three branches, and furnished with bristles. Testaceous covering folded in two, but without a hinge, enveloping the thorax and feet, and generally terminating in a point at its

posterior extremity. Feet ten, more or less divided, and furnished at their extremities with bristles. Tail short, folded below the body, and terminated by two conical or setaceous appendages. Eggs interior, until the moment of deposition in the water; ovary lateral, in a dorsal cavity between the body and testaceous covering. Genera, *Polyphemus*, *Daphnia*, *Lynceus*.

ORDER.—OSTRAPODA.

Covering forming an oval bivalve shell laterally compressed, bent and dorsally inflated, and almost straight, or a little notched on the opposite side. Before the hinge in the median line the eye appears like a large black spot. The antennæ inserted immediately below are setaceous, shorter than the body, composed of seven or eight articulations, of which the last are the shortest, and terminated by a fascicle of bristles, which assist the creature in swimming, and which, according to Jurine, the animal develops in different degrees, as it desires to move itself more or less rapidly. The mouth is composed of a carinated labrum and two dentate mandibles, each bearing a triarticulate palpus. The feet are six in number, of which the anterior (the strongest pair), are directed forwards, terminated by two joints, furnished with stiff bristles, or long hooks, and situated below the antennæ; the other feet are without these bristles; the second are first thrown back, bent and terminated in a long and strong hook; the last pair are not seen outwardly; they are raised and placed by the sides of the body, they support the ovaries, and terminate in two small hooks. Genera, *Cypris*, *Cytherea*.

ORDER.—PHYLLOPODA.

The *Phyllopoda* have a body sometimes naked, at others defended by a case which envelops them, in the manner of a bivalve shell, or else covering them above, in the form of a semi-oval buckler, is divided into a great number of small segments, each of which, with the exception of the last, bear a pair of foliaceous feet: it is often terminated by a tail, having at its extremity two threads or appendages adapted for swimming. The head has two eyes, and sometimes even three; four or two antennæ, a labrum, two mandibles; four or two maxillæ and a tongue.

First family.—*Myteloides*. These have only two eyes, which are situate close together, and borne by a head which is perfectly distinct from the case. The case is in the form of a bivalve shell, capable of enclosing the body. It has four antennæ, of which the exterior pair are very large, each composed of an eight-jointed peduncle, and two setaceous branches of twelve joints each. Below the inflated, armed and truncate mandibles, is a pair of foliaceous maxillæ. The body is divided into twenty-three segments, each, with the exception of the last, bearing a pair of similar feet, bifid at the end, with the exterior division simply ciliated internally, at the other quadri-articulate, and strongly ciliated exteriorly. The ovaries extend under the sides of the body, from the first pair of feet to the eighteenth, and the eggs, some time prior to oviposition, pass into the dorsal cavity, as into a matrix, where they finish their development. At first they are round and transparent, but they finally become more obscure, and assume an irregular and angular shape. Genus, *Limnadia*.

Second family.—*Aspidiphora*. The body stripped of its case is at first almost cylindrical, above convex, below concave, with a central longitudinal furrow, and terminated by an elongate cone. It is composed of a head, and thirty or more rings, which diminish greatly in size towards the posterior extremity, and of which the last five or seven are without feet. Genus, *Apus*.

Third family.—*Ceratophthalma*. Of which Latreille has given no general characters, but described the genera which appear to differ very considerably from each other. Genera, *Eulimene*, *Artemia*, *Branchipus*.

ORDER.—XYPHOSURA,

Being the first edentate order of *Crustacea*. There is no *siphon*; maxillæ formed by a maxilliform and spinous prolongation of the internal and superior extremities of the coxæ of the six anterior pair of legs, and surrounding the pharynx: the case of two pieces; the anterior large and semilunar, having two compound eyes on its superior surface, the second piece of the case is much less, and in shape is somewhat triangular, truncate, and notched at its posterior extremity; to this second piece is appended a sharp, solid, triangular tail. Genus, *Limulus*.

ORDER.—SIPHONOSTOMA.

These have a siphon, or sucker, more or less distinct, formed of four pieces, corresponding to the labrum, tongue, and two mandibles, of the dentate *Crustacea*. Number of feet never exceeding fourteen; case composed of a single piece, forming in front a kind of buckler.

First family.—*Caligides*. These have many of their feet, more especially the posterior ones, formed for swimming. The posterior extremity of the body is preceded by a shield-like or semi-lunar case. Genera, *Argulus*, *Caligus*, *Pandarus*, *Pterygopoda*, *Dinemoura*, *Anthosoma*, *Cecrops*.

Second family.—*Lernæiformes*. Their body is elongate, cylindrical, attenuated posteriorly, composed of from seven to ten segments. The feet are small, or the analogues of the natatory feet in the preceding order are composed of but a single articulation, and two fingers, or two minute articulated stalks; sometimes the sides of the thorax are dilated into large lobes, bent in the form of a horse-shoe, and embracing the posterior portion of the body: they have at least two antennæ, and the feet are furnished with claws. Genus, *Nicotkœ* (found in branchiæ of the lobster), *Dichelestium* (found on the sturgeon), *Nemesis*.

ORDER.—TRILOBITES.

This singular order of *Crustacea*, apparently belonging to another and an older creation, are, perhaps, of all animals the most difficult to place naturally. They at first sight appear to supply a void which occurs between the *Crustacea* and the genus *Glomeris*, at the commencement of the *Myriapoda*. Genera, *Calymenes*, *Asaphus*, *Oxygya*, *Paradoxides*.

(To be continued.)

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ART. XXVI.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 92.)

CHAPTER VIII.

[Cwm Elan.]

VAST beyond man's conception was the shock that gave Cwm Elan birth: the solid rock was forced upwards from the bowels of the earth, and rent in twain, a portion subsiding either way, while the shattered and loosened fragments thundered down the sides of either precipice, till they met, with deafening clang, in the yawning abyss beneath. This abyss, thus formed of fragments of rock of every size and shape, is the channel through which the boisterous Elan pours its snowy-crested waters. The rocky banks are partially clothed with vegetation. The bare cliff anon presents its perpendicular face to the pass; then a shelf above will be seen affording footing for a little forest of oak, and birch, and witch elm; and the wild rose, honeysuckle, and brier intermingle and consolidate the mass: the wild rose throwing its streamers of red blossoms—in Wales how brightly red!—far adown the face of the bare cliff below. Above this forest the naked rock again appears, and again a nature-planted garden, and so alternately to the top, the green gradually decreasing, and the pinnacles of weather-beaten rock peering over all. It is in such a place as this, when we are alone with nature, and commune with her face to face, gazing on her in her wildest forms—when we are

amidst the rush of waters, roaring so that thunder might pass over us unheeded—when we are overwhelmed with the grandeur and majesty of the scene, “dazzled and drunk with beauty,” that we feel most deeply our own insignificance.

The Insect-Hunter may, perhaps, never have a reader who has ‘roamed, or who even will roam, where he next bent his footsteps, though Cwm Elan may be better known than it is; and even now it is known, though but little admired or toured. There is a gentleman’s residence, known by the same name beyond the pass, and another beautiful place embosomed in wood, called Nantgwilt: leaving these behind, and proceeding towards Rhayader, you enter the stupendous pass of Cwm Elan. After feasting himself upon the scene, the Insect-Hunter scaled the rocky mountain to the left; it was a toilsome and wearisome ascent. As he ever and anon sat down to rest and refresh himself with gazing on the scene below, he oft repeated—“I am not what I have been;” and, in truth, he was not: disappointment had stricken him, sickness had weakened him; limbs, once untiring, had lost their vigour—he was but as the shadow of his former self. His eye dwelt on the landscape beneath his feet; as a map, the country was spread before him. He traced the course of Elan up to the town of Rhayader, a town through which the joyous Wye comes leaping to meet Elan, his mountain-bride. Elan, though considerably the larger stream, loses its name at the junction, and assumes that of Wye. The Insect-Hunter gazed on the meeting of the waters, and then followed them in imagination (for a mountain concealed them from his eye), till they were united with the waters of Severn, and lost in the Bristol Channel. These beautiful rivers, Wye and Severn, rise side by side, on the mighty Plinlimmon, and side by side they flow into the ocean. The Severn makes a fine curve northward, passing through Shrewsbury, then southward through Worcester and Gloucester. The Wye runs southward through Rhayader, Bualt, Hay, Hereford, Ross and Monmouth, and they again unite at the entrance of the Bristol Channel. Here let the reader supply a simile—two brothers—different courses through life—old age—settle down together, &c.

Time, which has clad the scene before and about me with such surpassing majesty and loveliness, may, in days to come, overthrow these features of ages by the tempestuous workings

of an hour. Earth may again tremble to its very centre ; these stupendous rocks, which century after century have become more and more beautiful, as time has established for Flora a footing here and there amidst the general desolation, may fall headlong to earth, may lose their flowers and leafy honours, and be ground to powder in the rush of elements. When earth again rests from the convulsion, Cwm Elan may be the centre of an all but boundless plain ; the muddy waters of some mighty river may twice a day slowly ebb and flow through cattle-feeding meadows, in the very track over which the headlong Elan now hurries in all its boiling haste. On this river stately ships, with their smoky chimneys, may be incessantly running to and fro, warehouses may raise their heads half way to the clouds, and myriads of money-hunting men may be traversing the streets of some mighty city.

So pondered the Insect-Hunter ; and as he gazed, the hateful scene forced itself on his imagination. He arose, and clambered up the cliff,—the summit was gained ; and though higher lands rose before him, the ascents were comparatively easy ; he strode on and on, he stretched over moss and moor, waded knee-deep through acres of bog covered with smiling green, or beds of luxuriant heaths purpling the mountain far as the eye could reach : on he went, guided solely by the sun's position in the heavens, for the sun was for a moment seen through the driving clouds ; at last he reached a point which seemed higher than all around him, and here he scared a dozen carrion crows from the carcase of a sheep on which they were feeding ; the crows flew round and round him, uttering their awful imprecations. In every direction the same wild desert met his eye ; a thousand mountains were around him, all alike covered with moss, and carex, and cotton-grass and heath. Not a single tree, not a track, not a trace of man was to be seen ; the clouds thickened, and swept the mountain top on which he stood, completely shutting out the scene, whose very sameness began to weary him, clothing him in a mantle of vapour. The Insect-Hunter sat down to rest.

* * * * *

The Insect-Hunter is looking on the Wye ; the banks are crowded with people, some with hooks, some with spears, some with lines ; a hundred or more stationed on the bridge were, like the Insect-Hunter, merely lookers on. The object of the

pursuit was salmon, which were just now on the move. Unfortunately not one was captured while he was there; he cannot, therefore, give a circumstantial account of the affair, but the zest with which the sport was followed was highly animating. About 100 yards above the bridge—it was at Rhayader-y-Gowy—the Wye falls five feet, in one unbroken sheet, over a ledge of rocks, and thirty yards below the bridge about as much over a similar ledge: the salmon make nothing of leaping these falls in their way up the river. In the very midst of the agitated water, directly beneath the falls, the anglers were incessantly plying their lines, with what chance of success I know not; but with one accord, at the sudden arrival of the fish, butchers, bakers, shoemakers and blacksmiths had left their various employments, and, with tucked-up shirt sleeves, had joined in the animating pursuit.

CHAPTER IX.

[The Insect-Hunter again descanteth on Welsh mountains; he arriveth at Llandegly.]

The road from Rhayader, or more properly Rhayader-y-Gowy, through Pen-y-bont to Llandegly, has little in it that is worthy of remark. The Rhayader mountains present a character wholly different from those I have noticed in the neighbourhood of Hay and Brecon; these last are of gentle ascent near the base, and carefully cultivated half way up their sides, and above this limit are to be found sheep walks, which increase in poverty, and give way to *Carex*, heath, and maun pits on the summits. The Rhayader mountains rise abruptly, are generally beautifully wooded at the base, the wood decreasing gradually with the ascent, and here and there intermingled with bare grey rock, which, above the limit of wood, becomes more apparent. The summits are peaty and wet, producing heath, *Carex*, *Eriophoron*, and *Narthecium ossifragum*, which was now in blossom; and afford wretched sheep walks. Again, as we approach Pen-y-bont, but far beyond both this place and Llandegly, we have before us quite another character of mountain, highly cultivated two-thirds of the height, and above this an exquisitely rounded summit, smooth, covered with velvet tuft, affording the finest possible pasturage for sheep.

This is preeminently the character of Radnor Forest, the highest land of the kind, and is possessed by all that mass of Radnorshire mountains which now present themselves in front of the traveller. Approaching Pen-y-bont a minor object attracts our notice—a chain of hills running along the valley, with a clearly defined and exquisitely picturesque outline, standing out in bold relief against the distance-dimmed forest. This chain has a character peculiar to itself; its summit is craggy, rocky, and uneven, and is in no part rounded like the mountains which surround it: it is totally unconnected with other hills, and forms the most striking object of the neighbourhood. This chain is known by the name of Llandegly Rocks.

At Pen-y-bont the old and new bridge are objects worthy of a passing note; the old bridge is built of wood, is very long, and very tottering. The fair at Pen-y-bont was annually held on this bridge. It was a strange and a dangerous place for the Welsh folk to congregate, but nevertheless they would not forsake it; so the authorities took on themselves to hang a suspension bridge across the Ithon, which has been accomplished in a most masterly style; and is not only an elegant object, but capable of bearing all the fair folk, were they increased a hundred fold: the two bridges stand side by side, the wooden one supported by a hundred props, the iron without a single one. The “*twa brigs*,” the old and the new, are now conveniently situated to hold a discourse, if it so pleased them, on times past, present, and to come; they would at least know quite as much of the future as any of the wiseacres who are continually predicting thereanent.

From Pen-y-bont to Llandegly there is little to attract attention; the Llandegly rocks accompany the road on the left nearly all the way, but the traveller is on ground too low to observe any of the higher grounds in the neighbourhood.

CHAPTER X.

[Llandegly Rocks. Sunset. Water-break-its-neck, Kington, Leominster.]

The Insect-Hunter tarried some days at Llandegly, and found much to admire and to enjoy. At evening he mounted

the "Rocks," and watched the sun sink into a tumultuous mass of mountains. The mists rising at sunset became resplendent, as the god of day finished his daily course, and the mountain tops threw their long black shadow on the illuminated vapour, as though it were a solid plain. When the sun was gone, the mist flooded the scenc, and imposed a level surface where a thousand hills had reared their heads a few moments before. But the sky seemed to gain the beauty that the earth had lost; first it became golden, afterwards the loveliest red, and finally subsided into a clear transparent green, over which little rosy clouds continued floating for hours. The Llandegly rocks are about as high as Malvern Hills; around on every side the mountains rise far above them; to the north and east, the nearer and more exquisitely rounded masses of Radnor forest close the view; to the south and south-west, the gigantic Black Mountain and majestic Beacon tower above the surrounding scenery; west and north-west, the Rhayader mountains, and the Plinlimmon chain beyond, present a numberless series of summits, amongst which Plinlimmon itself is not to be distinguished.

Although the Insect-Hunter stayed some days at Llandegly—*mem.* not to drink its nauseous waters,—he did but very little for Entomology. Here, as at other places, the dogs became his friends; Taffy and Trusty, tenants of the same roof, were his constant companions. The Llandegly country is abundant in flowers; the meadows—and I think the character is peculiarly Welsh—are really brilliant with the assemblage of colours; the hedges were half filled with the exquisitely beautiful *Vicia cracca*, and roses of the deepest red. The Entomology of such a country must be rich. Leaving Llandegly, the Insect-Hunter once more turned his face towards England; the road passes over a part of Radnor forest, and the constantly varying views present many scenes of interest. Water-break-its-neck is a wild spot, a dark and dull chasm, in the mountain side, apparently torn long since by some violent convulsion of the earth. The rocks are beautifully adorned with shrubs and stunted trees, springing in wild and grotesque forms from every ledge; a silvery stream of water issues from the summit of the chasm, and falls into the abyss; the rocks, which are steep and of very difficult access, afford building-places to numberless hawks, some of which may be constantly seen floating, ghost-

like, within the chasm, or hovering on winnowing wings about it. The innumerable rabbits which frequent this part of the forest are probably a considerable attraction to these birds. Water-break-its-neck is after all but a little affair, though striking from its peculiarity; the looking down—for the traveller can only see it to advantage from the top—on rocks and trees, and the backs of the hawks and other birds as they float across, is pleasing from its novelty.

Approaching Kington, Stanner Cliff, to the left, is a much finer object. The Insect-Hunter has never seen a better instance of the beautiful effect of intermingled trees and rocks. It is isolated and unconnected in character with the surrounding scenery. It derives no beauty from any thing but itself, and alone is perfect. It would make a most lovely picture, but is a subject that a painter would never choose. It has no foreground, no distance,—it is in itself the picture. At Kington the Insect-Hunter entered England, and the same evening reached Leominster. At that town he has spent many happy days, and its natural history has claimed his particular attention; but whether he detail the result of that attention, or pass on in his narrative to other scenes, remains for chance and time to determine.

ART. XXVII.—*Essay on Parasitic Hymenoptera,*

By A. H. HALIDAY, M. A.

(Continued from p. 106.)

GEN. XI.—OPIUS.

Palpi maxillares 6-articulati. Mandibulæ forcipatæ, clypeo contiguæ vel rima transversa distantes. Occiput retusum immarginatum. Abdominis segmentum 2 cum 3 concretum, reliqua discreta. Alarum anticarum areola disci antica remota, cubitales tres. Posticæ nervo recurrente disci auctæ in plerisque.

Subgen. I.—OPIUS.

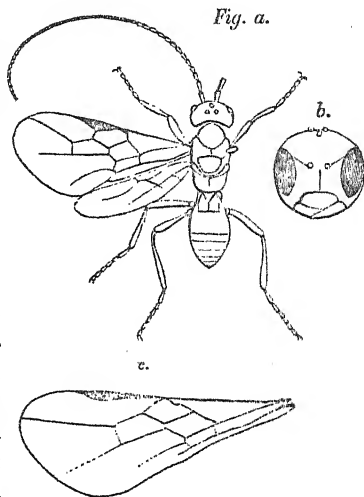
Palpi labiales 4-articulati. Terebra linearis. Areola cubitalis 2 longior quam latior.

Opius *Wesm. Monogr. Brac. Belg.* 115.
G. IX.

**Bracon*, Fam. I. Heterocl. I. *N. ab E. Berl. Mag.* V. 15.
—— Sectio III. *Act. Acad.* IX. 303.
—— *Monogr.* I. 52.

Gnamptodon *A. H. H. Ent. Mag.* I. 265.

Characteres generici a Wesmaelio jam optime determinat sunt: paucula tantummodo pro regula nostra animadvertenda erunt: labrum transversum fere semicirculare, epipharyngis ligula apicali brevissima obtusa prostante: palpi maxillares longitudine varii, articulis 2 interioribus minimis: labialium articulus basalis plerumque brevior est, reliqui subæquales: occiput ut in *Alysiis* retusum, superne cum vertice sensim collabitur: abdominis segmenta septem tantum integra apparent, e quibus 2 maximum, quippe e duobus conflatum, quorum juncturam stria subtilissima raro prodit.



Opii statura universa alisque non obscure referunt *Alysiis*. Cum *Rogadibus* ex adverso mediante subgenere *Colaste* facile concurrunt. Typum genericum præstabunt *O. carbonarius* atque proxime affines.

Specierum descriptiones in *Monographia Braconidarum Belgicorum* Clm. Wesmaelii, plene et accurate quantum fieri poterat expressas hic iterum perscribere nolui. Illas tantum ex integro illustrandas mihi delexi, quæ vel hactenus ineditæ videbantur, vel in multitudine aucta discrimina quædam adjecta poscebant.

A. *Cubitus e basi stigmatiz exortus.* (Fig. c.)

Sp. 1. *O. abnormis.* *Niger*, antennarum basi ore pedibus abdomineque longe petiolato testaceis, fem. terebra exerta brevissima. (Long. 1—1½ lin.)

O. abnormis. Wesm. *Monogr.* 117. No. I.

Habitat in Hibernia boreali mihi semel lectus fem.: marem ex Anglia (prope Vindisoram Junio mense lectum) transmisit *F. Walker.*

AA. *Cubitus a stigmatē exceptus.*

B. *Areolæ cubitalis* 2^{dæ}. *limes anterior interiore longior.*

C. *Pleuræ læves, aut sulco medio impunctato.*

D. *Nervus recurrens erectus in areolam cubitalem* 2^{dæ}.

E. *Mesothoracis dorsum lævissimum.*

F. *Os patulum i.e. mandibulæ a clypeo distantes.*^a

Sp. 2. *O. Pygmæator.* *Niger, mandibulis testaceis, palpis breviusculis pedibusque piceis, femoribus anticis et tibiærum basi dilutius, fem. terebra* $\frac{1}{2}$ — $\frac{2}{3}$ *abdominis longitudine.* (Long. 1 lin.)

**Bracon pygmeator* *N. ab. E. Berl. Mag.* V. 15. No. 19.

Id. id. *N. ab. E. Monogr.* 52. No. 6.

Opius funebris. Wesm. *Monogr.* 124. No. 8.

Habitat in nemoribus Angliæ et Hiberniæ passim sat frequens.

Sp. 3. *O. pendulus.* *Niger, palpis elongatis et mandibulis testaceis, pedibus piceis, femorum plaga laterali et tibiærum basi dilutius, fem. terebra* $\frac{1}{2}$ *abdominis longitudine.* (Long. 1 lin.)

Statura O. instabilis. Antennæ corpore breviores 19-articulatæ nigrae: clypeus fuscus: mandibulæ testaceæ, basi dilatatae et subtus excisæ: palpi longissimi testacei basi fusci: metathorax nitidus sublævis: abdominis segmentum 1 subtiliter rimulosum at subnitidum: pedes fusco-testacei, coxis nigris, trochanteribus femorum margine supero et infero tibiis apice tarsisque fusco-piceis: alæ hyalinae, squamulis piceis, stigmatē nervisque fuscis: cubiti abscissa 1 e stigmatē breviter extricata, quæ speciei præcedenti subnulla: præterea areola radialis minûs effusa, cubitalis 2 longior et alæ posteriores latiores existunt.

Habitat Hiberniam borealem rarissime.—*Marem feminamque* prope: Londinum inventos misit, *F. Walker.*

^a Conferendus Rogas funestus, ante, p. 93, No. 20.

Sp. 4. *O. lugens*. *Niger, mandibulis testaceis, pedibus piceis, femoribus anticis tibiis tarsisque dilutius, fem. terebra sub-
erecta.* (Long. $\frac{3}{4}$ lin.)

Niger nitidissimus: antennæ corporis longitudine, 21—23-articulatae; metathorax lævissimus: abdomen suborbiculatum, segmento 1 gracili obconico-attenuato lævissimo: palpi pedesque fusco-testacei, coxæ nigrae, femora basi, posteriora fere tota, tibiæ posticæ, tarsique apice fusco picei: alæ hyalinæ, stigmate nervisque fuscis: areola radialis alæ apicem non attingit: præterea stigma paulo latius et areola cubitalis 2 brevior apice attenuata a sequente distinguunt: nervi recurrentis vestigium in alis posticis.

Habitat Angliam, Hiberniam, Ebudes insulas, at infrequens.

Sp. 5. *O. apiculator*. *Niger, ore pedibusque testaceis, tibiis posticis apice fuscis, fem. terebra erecta brevissima.* (Long. $\frac{3}{4}$ lin.)

**Bracon apiculator*. *N. ab. E. Monogr.* 56. No. 10.

Opius levis. . . *Wesm. Monogr.* 122. No. 5.

A præcedente discrepat, præter alas et pedum colores, abdominis segmento 1 sublineari nitidiusculo quidem at subtilissime rimuloso: exemplaria *varietatis*, mas plerunque majora et stigma paulo crassius videtur: discrepant hæc ab *O. spreto* coloribus, statura minore, antennis pauci-articulatis et cubiti abscissâ extimâ subrectâ, quæ in illo lenissime reflexa seu postice concava extat.

Var. β.—Abdominis segmento 2 basi pallide piceo.

Var. γ.—Coxis et femoribus posticis superne fuscis.

Var. δ.—Antennarum scapo pedibusque totis testaceis.

Opius exiguus. *Wesm. Monogr.* No. 123. No. 6.?

Habitat in nemoribus Angliæ, Hiberniæ passim frequens.

Sp. 6. *O. clarus*. *Niger, antennarum scapo ore pedibus abdominisque segmento 2 antice rufis, terebra suberecta, fem.* (Long. 1 lin.)

Antennæ corpore longiores, articulis 34, binis interioribus rufis: mandibulæ basi subtus excisæ et clypeus rufi: metathorax lateribus rugulosus medio lævigatus: abdominis segmentum 1 oblongum rugulosum, 2 rufum apice determinate nigrum, sequentia nigra: pedes rufi, coxis anticis testaceis: alæ hyalinæ, squamulis rufis, nervis fuscis: stigma dilutiùs fuscum, lineari-lanceolatum angustum, intra primam trientem cubitum excipiens: areola

radialis in alæ apicem fere effusa, cubitalis 2 apice parum attenuata: alæ posticæ nervi recurrentis vestigio.

Sp. 7. *O. spretus*. *Niger, antennarum scapo ore abdominisque segmento 2 antice testaceis, pedibus flavo-testaceis, fem. terebra subævarta.* (Long. 1 lin.)

Præcedentis statura, sculptura alæque; colores tantum nonnil diversi: antennæ 31—34-articulatæ; articuli 2 priores, clypeus, mandibulæ testacei: palpi pedesque pallidiores; tibiæ posticæ apice subtus obscuriores, tarsi iidem fusciscentes: abdominis segmentum 2 basi sordide testaceum, utrinque obsolete foveolatum, apice fuscum: venter pallidus.

Habitat in Hibernia boreali lectus Octobri ineunte,—etiam prope Senani ripas,—marem ex Anglia misit *F. Walker*.

Sp. 8. *O. victus*. *Niger, antennarum basi late ore pedibusque flavo-testaceis, tibiis posticis apice fuscis, stigmatè longo lineari, terebra exarta brevissima, fem.* (Long. $\frac{5}{4}$ —1 lin.)

Antennæ feminae corpore fere sesquolongiores, articulis 31—34, interioribus testaceis, exterioribus fuscis: facies obsolete carinata: mandibulæ et clypeus testacei: palpi longi pallidiores: metathorax et abdominis segmentum 1 punctato-rugulosa subnitida, hoc sublineare, 2 basi utrinque foveolatum, fusco-testaceum: pedes flavo-testacei, tibiæ posticæ apice fuscae, tarsi iidem concolores pallidiûs annulati: alæ longæ hyalinæ, squamulis testaceis, nervis stigmatæque fuscis: stigma tenuissimum lineare, cubitum prope basin excipit: areola radialis alæ apicem attingit, cubitalis 2 elongata extimam æquiparans, apice nusquam attenuata: postica disci clausa: nervi recurrentis vestigium in alis posticis.

Obs.—*O. anali* non dissimilis, sed os patulum, cubitus propior a basi stigmati abscissâ primâ brevior, et areola cubitalis 2 multo longior.

Habitat prope ripas Senani autumnò lectus rarissime.

FF. *Os clausum* i. e. *Mandibulæ clypeo contiguæ.*

Sp. 9. *O. tacitus*. *Niger, antennarum basi late ore pedibusque testaceis, abdominis segmento 2 antice rufo, mas.* (Long. 1 lin.)

Bracon orbiculator. *N. ab. E. Berl. Mag. V. Tab. I. Fig. 2.?*

Antennæ corpore fere sesquolongiores, 30-articulatæ, articuli longiores quam *O. spreto*, interiores late rufescunt: facies subcarinata:

clypeus et mandibulæ testaceæ: pleuræ stria media impunctata metathorax et abdominis segmentum 1 rugulosa: alæ hyalinæ, squamulis testaceis, nervis fuscis, stigmate dilutius fusco aut fusco-testaceo, lineari lanceolato: areola cubitalis 2 apice attenuata, brevior quam *O. spreto*: nervi recurrentis vestigium in alis posticis.

Var. β? minor; antennæ basi fuscae, articulis 2 interioribus testaceis: pedes pallidius testacei: abdominis segmentum 2 fuscum: terebra exerta brevis: alarum stigma angustius. (Long. $\frac{5}{4}$ lin.)

Habitat Hiberniam borealem rarissime, prioribus olim commixtus; exemplar genuinum prope Londinum lectum exhibuit *F. Walker*.

Sp. 10. *O. exilis*. *Niger*, antennarum scapo ore pedibusque testaceis, abdominis segmento 2 basi rufo-piceo, areola cubitali 2 brevi apice attenuata, fem. (Long. $\frac{3}{4}$ lin.)

Hic iterum similis *O. tacito* et *parvulo*: antennæ, corpore parum longiores 26-articulatæ, articulis 2 prioribus tantum testaceis: metathorax medio lævigatus nitens: pedes testacei, coxis posticis basi tarsis apice fuscis: areola cubitalis 2 limes anterior interiore vix longior: antennarum articuli breviores quam *O. parvulo*.

EE. *Mesothoracis dorsum foveola punctiformi impressum ante basin scutelli.*

F. *Os clausum.*

Sp. 11. *O. pallipes*. *Niger*, antennarum basi ore pedibusque testaceis, fem. terebra subexerta. (Long. $\frac{3}{4}$ —1 lin.)

O. pallipes. *Wesm. Monogr.* 118. No. 2.

Antennæ basi latius obscure rufescunt in nostro.

Habitat mas—prope Londinum lectus *F. Walker*.

Var. β. Abdominis segmento 3 rufo-piceo.

Sp. 12. *O. analis*. *Niger*, antennarum scapo ore pedibusque testaceis, posticorum tibiis apice tarsisque fuscis, abdomine medio fusco, apice rufo, terebra exerta brevissima, fem. (Long. $1\frac{1}{4}$ lin.)

O. analis. *Wesm. Monogr.* 130 No. 13.

Habitat in Anglia semel lectus, in Hibernia boreali iterum.

FF. *Os patulum*.

Sp. 13. *O. instabilis*. *Niger, antennarum basi ore pedibusque testaceis, metathorace lævi nitido; fem. coxis posticis basi fuscis, terebra $\frac{1}{4}$ abdominis longitudine.* (Long. 1 lin.)

O. instabilis. *Wesm. Monogr.* 126. No. 9.

Obs.—In nostris abdominis segmentum 2 medio læve nitens: alæ albido-hyalinæ: nervus recurrens in areolam cubitalem 2 longe evectus: tarsorum articulus unguicularis *feminis* incrassatus.

Habitat Hiberniam borealem in nemoribus at infrequens.

Sp. 14. *O. crassipes*. *Niger, mandibulis pedibusque crassis testaceis, coxis trochanteribus femorumque margine supero et infero nigris, stigmatе elliptico; fem. terebra $\frac{1}{4}$ abdominis longitudine.* (Long. 1 lin.)

O. crassipes. *Wesm. Monogr.* 127. No. 10.

Habitat in Hibernia boreali semel atque iterum lectus.

Sp. 15. *O. sævus*. *Niger, antennarum scapo ore pedibusque testaceis, nervo recurrente subinterstitiali, metathorace ruguloso; fem. terebra $\frac{1}{4}$ abdominis longitudine.* (Long. corp. $1\frac{1}{3}$; alar. $3\frac{1}{2}$ lin.)

O. instabili major, antennæ longiores, alæ multo ampliores, areola radialis longior, nervi recurrentis insertio fere interstitialis: antennæ corpore longiores, articulis *mas* 34, *fem.* 29, duobus interioribus testaceis: clypeus et mandibulæ testaceæ, hæ basi non excisæ: metathorax abdominisque segmentum 1 rugulosi, hoc validum basi bicarinatum: alæ hyalinæ, squamulis testaceis, nervis et stigmatе fuscis: stigma tenuissimum lineari lanceolatum, cubitum in triente prima excipiens: areola radialis in apicem alæ effusa, cubitalis 2 sat longa, apice parum attenuata, nervus recurrens in alis posticis manifestus.

Habitat per Ebudes insulas *mas* et *femina* lecti Augusto mense,—*feminum* Damnoniensem misit *F. Walker*.

Sp. 16. *O. celsus*. *Niger, antennarum scapo ore pedibusque testaceis, metathorace ruguloso, areola cubitali 2 elongata æquilata, mas.* (Long. 1— $1\frac{1}{4}$ lin.)

Antennæ corpore longiores, 33—36-articulatæ: alæ amplæ glauco-hyalinæ, squamulis testaceis, stigmatе nervisque fuscis: *E.*

terebra *feminæ* discrimen quale petendum sit ignotum : *mas* præcedenti simillimus, nervi recurrentis insertione areolaque cubitali longiore nec apice attenuata differt. *O. cingulato*, *mas* areola radialis et stigma quam huic latiores sunt, metathoracis abdominisque segmenti 1 sculptura crassior.

Sp. 17. *O. vindex*. *Niger*, antennarum scapo ore pedibusque testaceis, areola cubitali 2 perbrevis, *mas*. (Long. $1\frac{1}{2}$ lin.)

O. sævo, *mas* similis; diversus tamen videtur. Mandibulæ basi subtus dentato-excisæ: antennæ 37-articulatæ corpore sesquilingiores: metathorax medio lævigatus: areola cubitalis 2 limes anterior interiore vix longior, nervus recurrens ab illa exceptus. Thorax acu perforatus, ideo situs in hac sectione (E E.) incertus.

Habitat in Hibernia boreali semel lectus.

Sp. 18. *O. maculipes*. *Niger*, antennarum scapo ore pedibus abdominis segmento 2 et sequentibus rufo-testaceis, tibiis posticis apice fuscis, *mas* abdomine postice fusco, fem. terebra exerta brevissima. (Long. $\frac{3}{4}$ —1 lin.)

O. maculipes. *Wesm. Monogr.* 128. No. 11.

Obs.—Exemplaria Belgica. *O. cingulato* majora erant, nostra vero minora.

Habitat—marem feminamque cepi Maio mense in Salice Hiberniæ borealis, fem. prope Senanum Augusto; alteram eamque minimam ex Anglia misit *F. Walker*.

Sp. 19. *O. cingulatus*. *Niger*, antennarum basi ore pedibusque testaceis, abdominis segmento 2 et sequentibus testaceis fusco-cingulatis, fem. terebra exerta brevissima. (Long. 1 lin.)

O. cingulatus. *Wesm. Monogr.* 120. No. 3.

Var. β.—Abdominis segmentis posterioribus totis fuscis.

Habitat in nemoribus Angliæ, Hiberniæ, passim frequens.

DD. *Nervus recurrens in areolam cubitalem 1 rejectus, aut interstitialis.*

Conferendus *O. sævus*, No. 15 ante; *Rogas braconius*, ante, p. 57. No. 14.

Sp. 20. *O. irregularis*. *Niger*, antennarum basi ore pedibusque testaceis, abdominis segmento 2 rufo-piceo, fem. terebra exerta brevissima. (Long. vix 1 lin.)

O. irregularis. *Wesm. Monogr.* 132. No. 15.

Add.—Thoracis dorsum puncto antescutellari impressum, ut in proxime præcedentibus: abdominis segmentum 2 basi utrinque obsoletissime rugulosum.

Habitat Angliam, Hiberniam, passim frequens.

CC. *Pleuræ sulco medio crenato vel rugoso.*^b

D. *Nervus recurrens evectus.*

E. *Os clausum.*

Sp. 21. *O. leptostigma*. *Niger*, antennarum scapo ore pedibus abdominis segmento 2 et sequentibus testaceis, stigmate lineari longissimo, terebra exerta brevissima, fem. (Long. 1—1½ lin.)

O. leptostigma. *Wesm. Monogr.* 138. No. 20.

Habitat—semel tantum lectus, et cum *O. cingulato* diu commixtus, quare de loco dubius sum.

Sp. 22. *O. parvulus*. *Niger*, ore pedibusque testaceis, coarctis posticis fuscis, mas oris regione et antennarum basi testaceis, fem. terebra exerta brevissima. (Long. $\frac{1}{2}$ — $\frac{5}{4}$ lin.)

O. parvulus. *Wesm. Monogr.* 139. No. 21.

Var. β.—Abdominis segmento 2 basi rufescente.

Add.—Mesothoracis dorsum lævissimum foveolâ nullâ præ scutello.

Habitat—mas semel lectus et cum Sp. 5, diutius commixtus.

EE. *Os patulum.*

F. *Mesothoracis dorsum lævissimum.*

Sp. 23. *O. docilis*. *Niger*, antennarum scapo ore pedibus abdominisque segmento 2 antice testaceis, mas. (Long. vix 1 lin.)

Antennæ corpore longiores, articulis 31, duobus interioribus testaceis: facies carinata: clypeus mandibulæ testaceæ, hæc basi

^b Sulcus ille supra coxas medias oblique ductus epimeron ab episterno discernit.

subtus excisæ: genæ apice, prothorax, suturaque thoracis laterales rufo-piceæ: metathorax abdominisque segmentum 1 rugulosa, hoc basi piceum: alæ hyalinæ stigmatæ nervisque fuscis: stigma latius quam Sp. 25, attenuato-trigonam, cubiti abscissam anteriorem opprimens: areola cubitalis 2 quam illi longior, extrorsum parum attenuata: postica disci clausa: nervi recurrentis in alis posticis vestigium nullum.

Habitat prope ripas Senani autumnò semel lectus.

FF. *Mesothoracis dorsum foveola antescutellari impressum, sulcis humeralibus inchoatis tantum.*

Conferendus O. reconditor, No. 29 post.

Sp. 24. O. æthiops. *Niger, mandibulis rufis, pedibus piceis, femoribus anticis apice et tibiæ basi dilutius, mas. (Long. $\frac{4}{5}$ lin.)*

Antennæ corporis longitudine 21-articulatæ nigræ: palpi breves fuscæ: metathorax medio lævis nitens: abdominis segmentum 1 sublineare punctulatum, reliqua lævissima: alæ hyalinæ, stigmatæ nervisque fuscis: stigma angustum fere lineare: areola radialis ante apicem alæ clausa, cubitalis 2 longa vix apice attenuata, postica disci haud perfecte clausa: nervi recurrentis vestigium in alis posticis O. *pygmætori*, mas, prima facie similis, differt sculptura, alis hyalinis, areola radiali strictiore, cubitali vero longiore.

Sp. 25. O. pactus. *Niger, antennarum scapo mandibulis pedibus abdominisque segmento 2 antice rufo-testaceis, fem. terebra subexerta. (Long. 1 lin.)*

Antennæ corpore paulo longiores 29-articulatæ: metathorax abdominisque segmentum 1 rugosa, opaca, hoc basi utrinque carinatum: alarum stigma angustum lineari-lanceolatum: cubiti abscissa prima brevissima extricata: alæ latiores quam O. *spreti* (cujus similimæ,) et areola cubitalis 2 minus attenuata: nervi recurrentis in alis posticis vestigium nullum.

Habitat prioribus olim commixtus.

Sp. 26. O. æmulus. *Niger antennarum basi late ore pedibus abdominisque segmento 2 antice testaceis terebra exerta brevi, fem. (Long. 1 lin.)*

Antennæ graciles corpore longiores 27-articulatæ testaceæ apice fusce: oris rima tenuis: clypeus et mandibulæ testaceæ:

metathorax subtiliter rugulosus: pleuræ sulco tenui in fundo crenulato: abdominis segmentum 1 lineare rugulosum, 2 testaceum, posteriora fusca: terebra fere $\frac{1}{4}$ abdominis longitudine (annon casu longius protrusa?) pedes toti flavo-testacei: alæ quales *O. pallipedi*, antennarum articuli longiusculi etiam hujus affinitatem innuunt, etsi os non absolute clausum et sulcus pleurarum crenulatus diversum vindicant.

Habitat ———? Unicum modo vidi.

Sp. 27. *O. polyzonius*. *Niger*, antennarum scapo facie orbita pedibusque testaceis, abdominis segmento 2 et sequentibus testaceis fusco cingulatis, areola cubitali 2 latiuscula, terebra subeverta, fem. (Long. $1\frac{1}{4}$ lin.)

O. polyzonius. *Wesm. Monogr.* 136. No. 18.

Habitat in Anglia, semel lectus.

Sp. 28. *O. nitidulator*. *Niger*, antennarum scapo facie orbita thoracis lineis 4 dorsalibus scutello pedibus abdominisque subcircularis segmento 2 antice rufis, mas. (Long. $1\frac{3}{4}$ lin.)

Bracon nitidulator. *N. ab. E. Monogr.* 56. No. 11.

Caput rufum, vertice medio nigro, linea fusca clypei basin cingente: antennæ corpore parum longiores 34-articulatæ articulis 2 interioribus rufis: thoracis lineæ intermediæ postice inter se antice cum exterioribus connexæ: metathorax abdominisque segmentum 1 crasse rugosa, hoc late obconicum: pedes testacei: alæ obscure hyalinæ, squamulis testaceis, nervis stigmatæque fuscis; stigma attenuato-trigonum cubitum paulo præ medio excipit: areola radialis ante apicem alæ acute clausa, cubitalis 2 sat longa apice attenuata: alæ posticæ latiusculæ nervo recurrente manifesto.

Habitat in Salicetis Hiberniæ borealis mihi semel lectus.

F. F. *Mesothoracis sulci plus minusve distincti.*

Sp. 29. *O. reconditor*. *Niger*, antennarum basi palpis pedibusque testaceis, mandibulis (mas clypeo) rufo-testaceis, fem. abdomine subcirculari, terebra recondita. (Long. $1\frac{1}{2}$ lin.)

O. reconditor. *Wesm. Monogr.* 134. No. 17.

Exemplaria quæ *F. Walker* prope Londinum legit pertinent *Var.* 3. His præterea incisuræ posteriores abdominis pallido micant, fem.

venter anusque flavo-pallidi : pedes toti silacei aut pallide-testacei, coxis fere albidis : alæ latæ hyalinæ squamulis flavidis, nervis stigmatæque fuscis : hoc attenuato-trigonum cubitum paulo præ medio excipit ; cubiti abscissa 1 brevis extricata ; areola cubitalis 2 brevis apice attenuata : thoracis sulci humerales læves postice in medio dorsi evanescunt, linea media præ scutello profundius impressa antrorsum evanescit.

Var. 1.—Abdominis segmento 2 plus minus rufo-testaceo, *mas* et *fem.*

Var. 2. ut *Var. 1.*—Sed prothorace testaceo, *mas.*

Var. 3. ut *Var. 1.*—Sed facie orbitisque rufo-testaceis, *fem.*

Sp. 30. O. truncatus. Niger, antennarum scapo ore pedibusque testaceis, mesothoracis humeris truncatis, fem. abdomine subcirculari, terebra exerta brevissima. (Long. 1½ lin.)

O. truncatus. Wesm. Monogr. 137. No. 19.

Habitat prope Londinum et Vindisoram etiam in Insula Vecti lectus Junio—Septembre. *F. Walker.*

Sp. 31. O. bajulus. Niger, mandibulis pedibusque rufis, coxis nigris, scutello rugoso, mas. (Long. 1¼ lin.)

Niger nitidus : facies punctulata subcarinata : palpi fuscis : antennæ (mutilatæ) nigre pedicello piceo : mesothoracis sulci tenues ante scutellum acute concurrunt : scutellum gibbum basi levigatum : metathorax rugoso-punctatus : abdominis segmentum 1 late obconicum concinne striatum, reliqua levissima : alæ hyalinæ squamulis piceis, nervis stigmatæque fuscis ; stigma elongatum tenuissimum cubitum intra primam tridentem excipit, areola radialis oblonga apicem alæ non attingit, cubitalis 2 elongata extimam æquiparans, apice æquilata : nervi recurrentis vestigium in alis posticis.

Habitat—*maris* unici reliquias valde læsas in Sylva Regia prope Hantoniam lecti dedit *F. Walker.*

Sp. 32. O. rudis. Niger, ore orbita abdominis segmento 2 antice pedibusque rufis, facie et thoracis dorso scabriculis, fem. terebra recondita. (Long. 1 lin.)

O. rudis. Wesm. Monogr. 141. No. 23.

Obs.—Propter puncturum reliqui capitis occiput hujus læve superne

sat definitum extat, ut in *Rogadibus* e subgenere 9^o, sed characteres vere *Opii*.

Habitat prope Londinum, lectus *P. Walker*.

Sp. 33. *O. casus*. *Niger*, *mandibulis pedibusque testaceis, femoribus posticis tibiisque apice fuscis, abdominis segmento 2 scabriculo, fem. terebra subcerta*. (Long. $\frac{5}{4}$ —1 lin.)

Niger parum nitens vage punctulatus et pubescens: os late patulum, facies subearinata; antennæ corporis fere longitudine (*mas* longiores) 21—24-articulatæ: mesothoracis sulci parum discreti, punctulati, postice non concurrentes: humeri subangulati: pleurarum sulcus late rugosus: metathorax rugulosus: abdomen *fem.* late ovatum subdepressum, *mas* angustius; segmentum 1 breve latè obeonicum, gibbum rugulosum, basi abrupte bicarinatum, 2 latè scabriculum, basi utrinque oblique impressum, impressionibus in arcum concurrentibus: pedes longi testacei; femora posteriora apice, tibiæ apice aut fere totæ cum tarsis fuscæ; rarius pedes toti fere testacei: alæ hyalinæ, squamulis piccis, nervis stigmatæque fuscis; stigma angustissimum; areola cubitalis 2 apice vix attenuata: alæ posticæ angustæ nervi recurrentis nullo vestigio.

Habitat in pratis humidis Angliæ, Hiberniæ, minus frequens.

DD. *Nervus recurrens rejectus aut interstitialis*.

Conferendus *O. rudis*, No. 32 ante, etiam e Subgenere 9^o. *Rogadum*, *R. lanceolator*, ante, p. 58. No. 16.

Sp. 34. *O. comatus*. *Niger*, *antennarum basi late ore orbita thoracis lituris dorsalibus scutello pedibusque testaceis, fem. terebra subcerta*. (Long. $1\frac{1}{4}$ lin.)

O. comatus. *Wesm. Monogr.* 145. No. 26.

Caput sordide testaceum, vertice medio late et occipite fuscis: oris rima fere semicircularis: palpi longi pallidi: antennæ *feminae* corporis fere longitudine, 23-articulatæ, articulo 3 longo, testaceæ articulis apice fusco-punctatis exterioribus fuscis; *mas* longiores graciliores latius infuscatæ: thoracis dorsum lineis 2 testaceis postice in lituram confusis, sulcis subtilissime crenulatis aut punctatis ante scutellum concurrentibus: scutellum sutura porcata

discretum, apice testaceum: metathorax niger rugoso-reticulatus: abdomen obovatum subdepressum segmento 1 longiusculo obconico, ruguloso, medio subcarinato: 2 pone medium stria transversa obsoletiore bipartitum et ibidem saepe testaceo signatum, basi nonnunquam substriatum; reliqua levissima nigra: alae obscure hyalinae, squamulis pallide testaceis, nervis subfuscis, stigma lanceolatum fusco-testaceum, medio fere cubitum excipiens, nervus recurrens vix rejectus: areola radialis alae apicem attingit, cubitalis 2 extrorsum vix angustata, postica disci subincompleta: nervus recurrens in alis posticis manifestus.

Obs.—Ambigit hic si ullus alter in ipsis finibus *Opiorum* et *Rogadum* conterminis.

Habitat in lucis umbrosis Angliae, Hiberniae rariùs.

Sp. 35. *O. rufipes*. *Niger*, antennarum scapo ore pedibus abdominisque segmento 2 antice rufis, cubito e medio stigmati prodeunte, fem. terebra recondita. (Long. 1—1½ lin.)

O. rufipes. *Wesm. Monogr.* 147. No. 28.

Var. β.—Abdomine toto nigro.

Habitat in Hibernia boreali rarissime,—feminam ex Anglia misit etiam *F. Walker*.

Sp. 36. *O. caelatus*. *Niger*, antennarum scapo subtus mandibulis pedibusque testaceis, posticorum tibiis apice tarsisque fuscis, facie thoraceque latè rugosis, stigmati lineari attenuato, mas. (Long. 2 lin.)

Caput oblatum punctatum, occipite laevi, facie rugulosa subcarinata: oris rima ampla fere semicircularis: palpi longi pallidi: antennae corpore multo longiores, mutilatae at supersunt articuli 40, duo interiores subtus rufescunt: thorax solito longior, confertim punctatus subopacus, mesothoracis lobis humeralibus medio laevigatis, intermedio vage punctato: abdomen oblongum, segmento 1 longo lineari subtiliter ruguloso, reliquis levissimis: alae hyalinae, squamulis rufo-testaceis, nervis fuscis, stigmati fusco-testaceo angusto lineari, cubitum in triente prima excipiente; areola cubitalis 2 apice non attenuata, nervus recurrens insigniter rejectus: nervus recurrens in alis posticis manifestus.

Habitat—marem unicum ex Anglia mecum communicavit benevole *Rev. G. T. Rudd*.

BB. *Areola cubitalis 2 lines interior aequalis.*

C. *Cubitus ultra medium stigmatis crassi exceptus;—os patulum.*

Sp. 37. *O. caffer. Niger nitidus, tibiis basi piceis, alis obscuris, cubito versus apicem cranescente, fem. terebra $\frac{1}{4}$ abdominis longitudine. (Long. $1\frac{1}{2}$ lin.)*

O. caffer. Wesm. Monogr. 150. No. 30.

Habitat prope Londinum lectus, mas et fem. F. Walker.

Sp. 38. *O. fulgidus. Rufus, antennis metathorace pectore abdominis segmento 1 et sequentium cingulis nigris, alis fuscis, mas. (Long. $1\frac{2}{3}$ lin.)*

Statura hujus crassa: caput rufum, palpi picei, antennae nigrae, articulis 2 baseos subtus piceis, mutilatae at supersunt articuli 28 breves (ideoque plurimi forent integris), mesothoracis dorsum rufum, sulcis impunctatis in medio evanescentibus et foveola praescutello: pleurae rufo-piceae, sulco profunde crenato: scutellum et metathorax nigri, hic crasse rugosus: abdomen ovato-orbiculatum, segmento 1 oblongo ruguloso: segmenta posteriora fusco-cingulata, cingulis confluentibus: alae fuscae, squamulis rufis; stigma obovato-lanceolatum, nervus recurrens fere interstitialis: alarum posticarum nervus recurrens incurvus areolam disci fere perficit.

Habitat in Insula Vecti legit Junio mense F. Walker.

CC. *Stigma angustius cubitum in medio, vel ante medium, excipiens.*

D. *Os patulum.*

Sp. 39. *O. placidus. Niger, antennarum scapo subtus ore abdominis segmento 2 antice pedibusque rufis, posticarum tibiis apice tarsisque fuscis, terebra reconstituta, fem. (Long. $1\frac{1}{2}$ lin.)*

Antennae corpore longiores 38-articulatae, articulis 2 baseos subtus piceis: facies carinata: mesothoracis sulci inchoati tantum et foveola praescutello: pleurae sulco impunctato: metathorax subtiliter rugulosus: abdomen ovatum, segmento 1 striato, 2 basi rufo, apice et sequentibus piceis: pedes testacei, coxis basi nigris, tibiis posticis apice tarsis iisdem totis fuscis: alae hyalinae, squamulis testaceis, nervis fuscis, stigma longissimum lineare, fusco-testaceum, cubitum in tridente prima excipiens.

Habitat in Hibernia boreali semel lectus.

DD. *Os clausum.*F. *Pleuræ sulco levi.*

Sp. 40. *O. carbonarius.* *Niger, antennarum scapo subtus clypeo mandibulis pedibusque testaceis, fem. terebra recondita.* (Long. 2—2½ lin.)

* *Bracon id.* . *N. ab E. Monogr.* 58. No. 13.

Opius procerus. *Wesm. Monogr.* 156. No. 35.

Obs.—*Nervi alarum in maribus crassi, feminis tenuiores.*

Habitat in pratis Angliæ, Hiberniæ, passim autumnno frequens.

Sp. 41. *O. impressus.* *Niger antennarum scapo clypeo mandibulis pedibusque testaceis, abdominis medio fusco-testaceo, fem. terebra recondita.* (Long. 2 lin.)

O. impressus. *Wesm. Monogr.* 157. No. 36.

O. carbonarii omnia fere, modo abdominis segmentum 2 apice et tria sequentia fusco-testacea sunt, cute molliori, quæ in exsiccatis late subsidit; tunc singula medio transversim impressa videntur margine undique elevato.

Habitat Hiberniam borealem et occidentalem, præcedente longe rarior;—marem ex Anglia misit *F. Walker.*

EE. *Pleuræ sulco crenato seu rugoso.*

Sp. 42. *O. Rusticus.* *Niger, antennarum scapo clypeo mandibulis pedibusque testaceis, scutelli apice punctato, stigmate lineari cubitum ante medium excipiente, fem. terebra recondita.* (Long. 1½ lin.)

O. carbonarii alæ et omnia fere sed pleuræ sulco late rugoso et statura minor; ab *O. Wesmælii* et proxime affinibus differt, antennis longioribus, thoracis sculptura leviori, stigmate longiore, cubiti insertione et areola radiali paulo longiore.

Habitat in Brassica Rapa Hiberniæ borealis autumnno lectus rariis.

Sp. 43. *O. scabriculus.* *Niger, mandibulis trochanterum apice tibiis femoribusque rufis, his superne tarsisque fuscis, capite thoraceque late rugosis, fem. "terebra ½ abdominis longitudine."* (Long. 1¾ lin.)

O. scabriculus. *Wesm. Monogr.* 154. No. 33.

Obs.—*Maris* segmenta abdominis 2, 3 et 4 singula ante apicem spinulas geminas subtilissimas albas gerunt.

Habitat—*marem* unicum ex Anglia misit *F. Walker*.

Sp. 44. *O. Wesmaelii*. *Niger*, *antennarum scapo subtus clypei apice mandibulis pedibusque testaceis, scutello rugoso, stigmati lineari-lanceolato, maris nigro, feminae fusco, terebra recondita.* (Long. vix 2 lin.)

O. carbonarius. *Wesm. Monogr.* 152. No. 32.

Areola radialis ab alae apice sat remota, oblongo-lanceolata; cubiti abscissa extrema recta vel apice lenissime inflexa.

Habitat in *Salicetis Hiberniae borealis* nec infrequens, Maio—Junio; ex Anglia misit etiam *F. Walker*.

Sp. 45. *O. sylvaticus*. *Niger*, *antennarum scapo subtus mandibulis pedibusque testaceis, scutello rugoso, stigmati lineari-lanceolato fusco-testaceo, fem. terebra recondita.* (Long. vix 2 lin.)

O. carbonarius. *Wesm. Monogr.* 152. No. 32. (cum praecedente conjunctus, an jure?)

Praecedenti similis, facies et thorax confertius rugosi: discrimen certissimum e forma areolae radialis quae perpaulo longior est cubiti abscissae extremam levissime reflexam seu postice concavam: stigma semper fusco-testaceum.

Habitat *Hiberniam borealem praecedente longe rarius*,—*marem* unicum ex Anglia misit *F. Walker*.

Sp. 46. *O. haemorrhæus*. *Niger*, *antennarum scapo clypeo mandibulis pedibus abdominisque dimidio anali rufo-testaceis, scutello rugoso, fem. terebra recondita.* (Long. 2 lin.)
Fig. a. b.

O. carbonarius, Var. 2. *Wesm. Monogr.*

O. Wesmaelii affinis, major, latior: scutellum totum rugosum: alae fere quales *O. sylvatico*, stigmati obscure testaceo. Abdominis segmentum 2 apice sequentia tota rufo-testacea.

Var. β .—Abdominis segmento 2 apice et sequentibus rufo-piceis nigro-cingulatis, stigmati fusco.

Habitat—*marem feminasque prope Londinum lectos misit F. Walker*, —*feminam Var. β . cepi ipse in Salice Hiberniae borealis.*

Sp. 47. *O. blandus*. *Niger*, *antennarum scapo subtus, ore pedibusque rufis, tibiis posticis apice fuscis, scutelli apice punctato, fem. capite rufo, vertice medio nigro, abdominis segmento 2 rufo, posterioribus fuscis, fem. orbita acuis abdominisque segmento 2 et sequentibus rufo-piceis, his nigro-cingulatis, terebra recondito*. (Long. vix 2 lin.)

Caput *maris* latissimum, rufum, vertice medio et occipite nigris; facies punctata medio carinata, litura fusca utrinque prope clypeum: palpi breviusculi testacei: antennae vix corporis longitudine 41-articulatae nigrae vel piceae: thoracis dorsum nitidum sulcis humeralibus inchoatis et foveola ante scutellum; hoc apice crasse punctatum: pleurae sulco lato transversim porcato: metathorax rugulosus medio laevior: abdomen oblongum segmento 1 basi perparum attenuato, ruguloso, carinula media antrosum bifurca, 2 rufo, sequentibus sensim obscurioribus: pedes breves, femoribus validis, rufo-testacei, tibiis posticis apicis spatio brevi tarsis iisdem totis fuscis: alae hyalinae, squamulis testaceis, nervis fuscis, stigmate subfuseo cubitum medio fere exaequante.—
Femina minor colore obscurior, abdomine latius ovato.

Habitat in Salicetis Hiberniae borealis mense Maio, *femina* semel, *mas* nonnisi rarissime lectus.

Sp. 48. *O. bicolor*. *Niger*, *antennarum scapo subtus ore pedibus abdominis segmento 2 et sequentibus rufis, fem. terebra recondita*. (Long. 1½ lin.)

O. bicolor. *Wesm. Monogr.* 151. No. 31.

Habitat Hiberniam borealem mihi semel lectus.

Subgen. II.—GNAPTODON.

Palpi labiales 3-articulati. Terebra brevissima subulata depicra: areola cubitalis 2 latior fere quam longior.

Bracon Microcephali, Spp. *N. ab. Fl. Monogr.*

Sp. 49. *O. Gn. pumilio*. *Niger, ore antennarum basi pedibusque flavis, abdominis segmento 2 basi apiceque arcuatim impresso*. (Long. ¾—1 lin.)

Bracon. *pumilio*. *N. ab. E. Monogr.* 90. No. 51.

Niger nitidus: caput subtilissime punctulatum facie media levigata: mandibulae parvae a clypeo rima brevi distantes, flavo-testaceae:

palpi flavi: antennæ corpore vix longiores articulis 21—23, quatuor aut quinque interioribus flavis: mesothoracis dorsum auleis binis subtilissimis postice evanescentibus: metathorax et pleurae leves: abdomen *fem.* ovatum convexum, segmento 1 obconico subtilissime rimuloso basi bicarinato; 2 lineâ transversâ arcuatâ in fundo punctatâ prope basin impressum, et alterâ in apice, utriusque sinu in basin abdominis obverso, pone illam subtiliter rimulosum, arcu anteo tumido laevi: venter carinato-compressus pallidus: terebra subexerta subulata deflexa, ut in *Leiothorontibus* nonnullis et *Euphoris*.—*Maris* abdomen angustius ovato-lanceolatum: pedes flavi unguibus fuscis: alæ (*fig. d.*) limpidae, squamulis flavis, stigmate fusco, nervis expallidis: stigma ovato lanceolatum cubitum perpaulo præ medio excipit: areola radialis oblongo-lanceolata alæ apicem non attingit, cubitalis 2 brevis antrorsum angustata et minor primâ, hæc apice summo nervum recurrentem excipit: nervi recurrentis vestigium in alis posticis.



Varietas antennis nigris, articulis 2 baseos tantum subtus flavescens, coxis posticis femorum margine supero tibiis posticis tarsisque apice fuscis.

Habitat per Ebudes Insulas et Hiberniam in foliis *Betulae albae* at infrequens, mensibus, Julio et Augusto.

Explicit Genus *Opius*.

ART. XXVIII.—*Notes on various Insects.* By J. W. BOND.

1. *Combat of Ants.*

SIR,—I beg to call your attention to one of the most astonishing phenomena regarding insects that ever came under my notice. A relation of mine, Mr. R. Long, having employment near Hornsey church, in the summer of 1828, was attracted by the singular actions of some sawyers, who were at work at a short distance from the house in which he was staying. On reaching them, he found they were annoyed by an immense body of ants flying above their heads, numbers of which were incessantly falling on them. The saw-pit was

situated between two trees, one of which appeared to be the station of an army of black, the other of an army of red ants. After each army had been flying for awhile round the tree of which it had taken possession, both, as by some mutual signal, rushed forward, and, meeting in mid-air, commenced a most desperate battle.

It clamor totis per propugnacula muris ;
Intendunt acres arcus, amentaque torquent.
Sternitur omne solum telis ; tum scuta cavaque,
Dant sonitum flictu *galeæ*, pugna aspera surgit.

VIRG. *Æn.* ix. 661.

As they fought, numbers fell to the ground, and always in pairs, one black and the other red ; and, when thus engaged, as it were hand to hand, each pair continued the horrid combat until one or both were completely disabled and unable again to rise. At last a truce was sounded, and each party retired to its respective post ; but, alas ! this was but for a time—it was only to recover their strength and recruit their exhausted energies. Burning with cruel rage and insatiable revenge, each party again rushed into battle—again the horrors of war were repeated and prolonged—and again they retreated. This continued during the whole day ; and the carnage did not cease till the sun was below the horizon. The air was then deserted by the combatants ; but the earth was strewn with the slain, the dying, and maimed. Not one that bit the dust ever again left the earth, to which his own rashness and savageness had brought him !

2. *Economy of Clytus arcuatus.*

SIR,—I published some remarks on this insect in the Entomological Magazine, Vol. I. p. 212 ; perhaps you will oblige me by inserting the following particulars, in addition. The females lay their eggs in the chinks of the bark of oak-trees that have been felled, but not stripped of their bark ; and, as they appear to frequent the trees for this purpose only, it is obviously the reason why the insect is never found on those trees which have the bark stripped. As soon as the eggs are

hatched, the larvæ begin to burrow in the bark, and they are frequently so numerous as completely to undermine it and detach it from the wood; as they proceed, the passage through which they pass is filled up with their excrement, which becomes as hard as the wood itself. The larva is white, and the pupa of the same colour, until within a few days of the change, when the elytra become darker, and the golden marks of the perfect insect become visible, and of a cream colour. To the eye of the Entomologist, this insect, at large, is a beautiful and truly interesting sight. When the sun is shining in its fullest splendour, these insects run over the surface of the bark, occasionally stop, and moving their thorax, produce a little creaking noise, indicative of happiness. Then they approach some little eminence, wave their antennæ backwards and forwards, as if elate with pride and joy, and, opening up their wing-cases, fly off in quest of other scenes. As I mentioned in my former communication, the males are excessively quarrelsome. I have often watched their combats; they stand at a little distance from each other, like bulls, then rush together with great violence, each aiming at the antennæ and legs of his opponent. On these occasions there is usually a female standing by, coolly looking on. I have this year (1836) taken above two hundred specimens of this insect, besides a great number of larvæ and pupæ, which, I believe, were before unknown to Entomologists.

3. *Nests of the Common Wasp.*

It is necessary to observe, that the nests of this insect are situated in banks, and sometimes a considerable distance from the surface. The best mode is to attack them by night, putting into the external aperture a lighted fusee, composed of moistened gunpowder mixed with sulphur and saltpetre. After this has been in the nest about five minutes, the wasps become so stupified with the fumes of the powder, that the nest may be dug out in perfect safety. Great care should now be taken not to cut the nest with the spade; it is frequently so large that there is great danger of this. After the nest is obtained, it is best to bring it home in a bag, carefully

tied up, as the wasps are very tenacious of life, and soon recover from the effects of the powder.

No. 1.—This specimen was nearly of a globular form; it contained seven plates, placed horizontally above each other; the central one was the largest, and the others gradually diminished in size. The plates were supported by rudely-constructed pillars, placed at irregular distances from each other, and composed of the same material as the plates themselves, a material resembling pulverized decayed leaves. The purpose of these pillars is to support the plates, and keep them at an equal distance from each other, so that the working wasps can freely visit all parts of the nest. The plates are divided into numerous inverted hexagonal cells, in each of which is deposited an egg of an oblong form, attached to the side, nearly at the bottom, by a glutinous matter, which envelops it at the period of its extrusion. From the egg is produced the white larva, which is so favourite a bait with fishermen; after this has been fed by the working wasps for a few days, it is covered in by them with a substance resembling whity-brown paper, and becomes a pupa, which resembles the larva in being perfectly white.

The cells do not, as might be supposed, contain, indifferently, males, females, and neuters on the same plate, but each kind is confined to a separate plate, one containing all males and neuters, and another all females. Those plates which contain the females are very readily distinguished from the others, by the superior size of the cells. Having observed a number of worm-like substances at the bottom of the cells, I was at a loss to know what they could be. It struck me they might have some reference to the black streak contained in each larva. On dissecting several larva I found that this streak was the intestinal canal; and I further learned, from the dissection of pupæ, that they were entirely without the black streak. On carefully examining the cells, I found that each of the cells in which were pupæ possessed one of the worm-like substances, and that the cells in which there were larvæ were invariably without them. I therefore conclude, that this substance is the contents of the intestinal canal, discharged at the time of transformation from the larva to the pupa state.

No. 2 contains but five plates, the central one the largest,

as before, and all of them somewhat convex; the plates were supported by pillars of much less strength than those of No. 1. The substance of which the nest was constructed was of a lighter colour, and there was but one single perfect female in the whole hive. In every other respect this nest agreed with No. 1. On examining the perfect insects, I found them to belong to a totally different species from *V. vulgaris*; they were smaller, and of a brighter colour. As I was examining the cells of this nest, one of those which had been covered in was gently opened, and the black antennæ of a male *Ripiphorus paradozus* protruded through the opening. Its appearance in emerging was truly singular; first the antennæ, then the head, the thorax, and abdomen; at last, when quite clear of its prison, it ran about with amazing celerity. I had shortly afterwards the pleasure of seeing a female *Ripiphorus* escape in the same manner.

No 3 was, in every respect, similar to No. 1. containing seven plates, and of this the perfect insect was the common wasp.

No. 4 was also similar, and was an amazingly large specimen, the central plate measuring upwards of fourteen inches in diameter. The larvæ, when in a state of rest, lay with their heads bent somewhat downward, but on moving anything before the cell which contains them, they stretch out their necks and open their mouths, reminding you of a nest of young birds. If a fly or piece of bread is given them, they emit a small portion of very transparent fluid from the mouth, and then attempt to eat, but I could never ascertain that the food diminished.

I am, Sir, yours, &c.

J. W. BOND.

A, Lenham's-buildings, Friar's-mound,
Church-street, Bethnal-green.

ART. XXIX.—*Notes on Diptera.* By FRANCIS WALKER.

(Continued from page 117.)

MOLOBRUS. *Latreille.*

- Molobrus Thomæ*, *Linnaeus*. Autumn; seashore; North Wales.
- M. morio*, *Fabricius*. Spring and autumn; near London; Wales; Isle of Wight.
- M. præcox*, *Meigen*. Spring and autumn; near London; Wales.
- M. fuscipes*, *Meigen*. Spring to autumn; near London; Wales.
- M. fucatus*, *Megerle*. Spring to autumn; near London; Wales.
- M. vitripennis*, *Hoffmansegg*. Spring to autumn; near London.
- M. fenestratus*, *Meigen*. Spring to autumn; near London; Wales; Isle of Wight.
- M. fuscipennis*, *Meigen*. Spring and autumn; near London; Isle of Wight; Scotland.
- M. pulicarius*, *Hoffmansegg*. Spring to autumn; near London.
- M. scatopsoides*, *Meigen*. Autumn; near London.
- M. sylvaticus*, *Meigen*. Near London.
- M. nervosus*, *Meigen*. Spring to autumn; near London; Windsor Forest.
- M. nitidicollis*, *Megerle*. Spring; near London.
- M. minimus*, *Meigen*. Spring; near London.
- M. flavipes*, *Panzer*. Spring and autumn; near London; North Wales.
- M. annulatus*, *Meigen*. Near London.
- M. pallipes*, *Fabricius*. Autumn; near London; Wales; Isle of Wight.
- M. hyalipennis*, *Meigen*. Summer and autumn; near London.
- M. aprilinus*, *Meigen*. Spring and autumn; near London.
- M. pusillus*, *Meigen*. Autumn; near London; Wales.
- M. longipes*, *Meigen*. Spring to autumn; near London; Windsor Forest.

- M. brunnipes*, *Meigen*. Summer and autumn; near London; Windsor Forest; Wales; Cumberland.
M. nemoralis, *Meigen*. Near London.
M. hirticornis, *Meigen*. Near London.

PLATYPALPUS. *Macquart*.

- P. ciliaris*, *Fallen*. June; July; September; near London; Windsor Forest; New Forest; Devonshire.
P. longicornis, *Meigen*. May to October; near London; Devonshire; Wales; Isle of Wight.
P. luteus, *Meigen*. June to October; woods, near London; Windsor Forest; New Forest.
P. dissimilis, *Fallen*. June; Windsor Forest; New Forest.
P. ventralis, *Megerle*. Near London.
P. candicans, *Fallen*. July; near London.
P. flavicornis, *Meigen*. June; near London; Windsor Forest.
P. bicolor, *Fabricius*. May; June; August; near London; Windsor Forest; Isle of Wight.
P. flavipes, *Fabricius*. June to October; near London; New Forest; Devonshire; Isle of Wight; Scotland.
P. cursitans, *Fabricius*. May; June; near London; Windsor Forest.
P. fasciatus, *Meigen*. Near London.
P. fascipes, *Meigen*. June; September; Isle of Wight; Isle of Portland; Cumberland.
P. annulatus, *Fallen*. June to August; near London; Windsor Forest.
P. annulipes, *Meigen*.
P. flavipalpis, *Macquart*. } Near London.
P. articulatus, *Macquart*. September; near London; Cumberland.
P. calceatus, *Meigen*. June; July; near London.
P. exiguus, *Meigen*. June to September; near London; Windsor Forest; New Forest; Isle of Wight; Cumberland.
P. minutus, *Meigen*. May to September; near London; Isle of Wight; North Wales; Devonshire; Cumberland.
P. dichroas, *Meigen*. June; September; New Forest; North Wales.

P. comptus. Mas et Fem. *Ater, nitens, pedes rufi fusco cincti, alæ subfuscae, nervi bene determinati.*

Ater, nitens, lævis : antennæ nigrae, capite paullo longiores : thorax fere glaber : abdomen pubescens : pedes rufi ; mesofemora parum incrassata, nonnunquam apice supra fusca ; metafemora apice nigra ; protibiae fuscae ; metatibiae apice fuscae ; tarsi fusci, basi rufi : alæ subfuscae ; nervi obscuriores, optime determinati : halteres flavi. (Corp. long. lin. $\frac{3}{4}$ — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$.)

Spring to autumn ; near London ; Hampshire ; Dorsetshire ; Wales ; Isle of Wight ; Cumberland ; Cornwall ; grass in woods.

P. robustus. Mas. *Niger, obscurus, antennae nigro-piceae, pedes flavi, tarsi nigro-annulati, alæ limpidæ, nervi flavi.*

Niger, obscurus, pubescens : antennæ nigro-piceae, capite vix longiores : trophi fusci : abdomen basi fuscum : pedes flavi ; mesofemora valde incrassata ; tarsorum articuli apice nigri : alæ limpidæ ; nervi flavi, non bene determinati : halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

P. mundus. Fem. *Ater, parum nitens, antennae nigrae, pedes flavi, meso- et metafemora nigra, alæ sublimpidae, nervi bene determinati.*

Ater, parum nitens, parce pubescens : antennæ nigrae, capite vix longiores : trophi nigri : pedes flavi ; meso- et metafemora nigra ; ungues et pulvilli fulvi : alæ sublimpidae ; nervi fusci, tenues, bene determinati ; halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. $1\frac{1}{2}$.)

Found near London.

HEMERODROMIA. *Hoffmannsegg.*

H. obsecratoria. Mas et Fem. *Ferruginea, abdomen et thoracis dorsum fusca antennae fulvae, pedes flavi, alæ sub-fuscae, nervi obscuriores.*

Ferruginea, parum nitens, fere glabra : caput fuscum : oculi nigri : antennæ fulvae, capite longiores : trophi fulvi : abdomen fuscum,

abitus fulvum: pedes flavi: alae subfuscae; nervi fulvi, bene determinati: halteres flavi. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. 2.)

Summer and autumn; in woods; near London; North Wales.

RAGAS. Walker.

Microphoræ similis, at nervus longitudinalis apice ramulum emittens.

Sp. 1. Ra. unica. Mas et Fem. *Atra, pubescens, alae nigro-fuscae, ad costam obscuriores, nervi nigri.* (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; Isle of Wight.

ATELESTUS. Walker.

Collomyiæ et Platypezæ similis, at alarum nervi aliter collocati.

Sp. 1. Ate. sylvicola. Mas et Fem. *Nigra obscura, pubescens, antennæ pedes et halteres piceæ, alae fuscae, nervi obscuriores.* (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

June; New Forest; Hampshire.

CYRTOMA. Meigen.

C. atra, Meigen. Spring to autumn; near London; Windsor Forest; Hampshire; Ireland; Scotland.

C. mckena, Haliday. Spring and summer; near London; Windsor Forest.

MICROPHORA. Macquart.

M. velutinus, Macquart. Spring to autumn; near London; Windsor Forest; Isle of Wight.

M. crassipes, Macquart. Summer; near London; Isle of Wight.

TRICHINA. Meigen.

T. flavipes, Meigen. Autumn; near London; North Wales.

- T. clavipes*, *Meigen*. Summer; Windsor Forest; Isle of Wight.
T. elongata, *Halliday*. Summer; near London.

HILARA. *Meigen*.

- H. thoracica*, *Macquart*. Spring to autumn; on windows; grass in woods, &c.; near London; Windsor Forest; Scotland.
H. nana, *Macquart*. Summer and autumn; near London; Hampshire; Cumberland.
H. litorca, *Fallen*. Summer and autumn; near London; Windsor Forest; Cumberland; Ireland.

LONCHOPTERA. *Meigen*.

- L. lutea*, *Panzer*. Summer and autumn; near London; Windsor Forest; Isle of Wight; Devonshire; Cornwall.
L. lacustris, *Meigen*. Spring and autumn; near London; North Wales.
L. palustris, *Meigen*. Spring and autumn; near London; North Wales.
L. flavicauda, *Meigen*. Spring to autumn; near London; North Wales.
L. rivalis, *Meigen*. Summer; near London.
L. tristis, *Meigen*. Autumn; woods; North Devonshire; North Wales.

L. flavicauda, *riparia*, and *rivalis* are probably varieties of one species, so also *L. lacustris* and *palustris*, so also *L. nigrimana* and *thoracica*.

ART. XXX.—Notes of Captures. By DELTA.

DEAR SIR,—Though the past summer has been by no means favourable to the Entomologist, yet I have a few species to add to the list of Lepidoptera found near Epping, published in your Magazine, Vol. III, p. 157, the discovery of which, with one exception, are due to Mr. Henry Doubleday. Although

the species are somewhat rare, and one or two peculiarly interesting, I should not have troubled you with this, had it not afforded me an opportunity of stringing to it a few remarks I made whilst collecting at Sudbury and Colchester, having, when at home, been too much immersed *civilibus undis*, to have leisure for Entomology.

The first insect I have to allude to is, *Limenitis Camilla*. A specimen of this butterfly was captured by Mr. Ray, near Park-hall, about a mile and a half from Epping, in a spot I have often hunted. The occurrence of a single specimen is rather remarkable; but, perhaps, is the prelude of a more numerous appearance next year, as I have observed to be the case sometimes.

For the first time in my life I saw this beautiful butterfly near Colchester last July, and its elegant appearance when on the wing will not soon be effaced from my mind. It is vain to try to describe it, but any Entomologist who would journey from London to Colchester, would be well repaid all expence, trouble and time, were he only to pass one fine July day in the woods bordering the road from Colchester to Ipswich. There he will find *L. Camilla* in profusion, *Apatura Iris*, *Melitaea Athalia*, &c.;^a and should he be fond of the fossorial Hymenoptera, and bees, he will find every sunny bank alive with them.

The larva of *L. Camilla* may be found by carefully hunting the leaves of the honeysuckles. The figure in Curtis is not the larva of *Camilla*, but of some other European species. I here also may remark that *Apatura Iris* was more common at Epping this summer than we have ever known it before; but alas! none could be taken. Had I been at home, I should have tried a plan which I know has proved very successful at Colchester. This is merely to have a quantity of black, very wet mud spread in some open place in the woods where *Iris* is seen,

Mille trahens varios, adverso sole, colores.

They will soon come down to it, to enjoy its coolness and moisture, and are then easily taken.

The next insect which I have to mention is *Paranthrene Vespiformis*, touching which, a little book was once written. This was captured, being "*in hortulo suo*," by Mr. H. Double-

^a Specimens of all these may also be purchased for a trifle of a person named Biggs, residing in these woods.

day, very early one morning in June, flying over the path, like an *Odynerus*, for which he took it at first sight.

Egeria Bembeciformis appeared in July in different parts of our woods; but from the rapidity of their flight over the fern and underwood, only two were taken.

Orgyia gonostigma. Several larvæ of this insect have occurred this autumn; as well as one of—

Stauropus fugi, which was beaten out by a person who was assisting me in collecting autumn caterpillars.

Charaxas graminis and *caspitum*. A new road from Epping to Woodford, through the forest, has been some years in hand. A labourer employed upon it, brought to Mr. H. Doubleday a number of pupæ which he had found in paring some turf to put on the sides of the embankments. Most were injured from their lying exactly the depth below the surface that the turf had to be cut. Mr. D. went himself to try and obtain more, and uninjured. Whilst there, he observed some moths darting like lightning over the turf, and occasionally over the low beech bushes. These proved to be *Charaxas graminis*.

Referring to Mr. Wailes's paper in your first volume, we found that they came out chiefly early in the morning. Accordingly he proceeded to the same spot very early one morning, in order to be there at the time Mr. Wailes mentions, but none appeared. However, about nine, out they came whizzing about in all directions over a small space of open ground. Their swiftness rendered them very hard to capture; but yet many were secured ere they retired to rest, which was in about two hours.

Wishing to see the insect alive, I went to the spot the next day but one, but after waiting two or three hours I could not see one; so I ran off into the thick of the forest for a ramble. The weather afterwards set in bad, so we could get no more. The pupæ found were chiefly *Heliophobus popularis* and *Hama testacea*, but two or three were *Charaxas caspitum*.

The entire additions to our list of Lepidoptera are as under :—

<i>Limenitis Camilla</i>	<i>Charaxas graminis</i>
<i>Parathrene vespiformis</i>	<i>caspitum</i>
<i>Egeria Bembeciformis</i>	<i>Cymatophora</i> Oo.
<i>Orgyia gonostigma</i>	<i>Xanthia rufina</i> .
<i>Cerura bicuspis</i>	

I have also one bird to add to the list published at page 290 of your last volume, as well as an omission to correct. A specimen of *Muscicapa luctuosa*, (the pied fly-catcher,) was killed in this town last May. The omission to which I allude, is that of the common kingfisher, *Alcedo ispida*.

In a little wood near Sudbury, I this summer met with several specimens of *Laphria nigra* and *Thecla W. album*. I also took there *Cleptes semiaurata* and *nitidula*, &c. Sudbury is, perhaps, one of the best localities in England for land and fresh water shells; but is not, from the deficiency of wood, very favourable to the Entomologist. However, some rare Lepidoptera occur, as *Agrotis aquia*, *Orthosia lota*, &c. Last July, *Leucania pallens*, common, to be sure, everywhere, swarmed in countless myriads over the meadows. A large lime tree in the garden of Mr. W. P. King, when in flower, offered a most interesting spectacle. Millions, I might say, of *Noctuites* visited it every evening. They were chiefly *Leucania pallens*, *Polia dysodea*, *Agrotis exclamationis*, *Segetum*, *Hortorum*, &c., intermixed with *Manestra brassicae*, *Oleracea*, *Persicaria*, and other *Noctuites* in smaller numbers.

Colchester and its vicinity appears to me to be one of the most favourable spots in our country for the Entomologist, and at the same time one of the most beautiful. I hope to be able to enter more into its Entomology soon, as I trust it will another year be fully investigated by one quite competent to the task, and residing on the spot. Of our Lepidoptera I have no doubt that a very large proportion are to be found there. The sandy soil is peculiarly favourable to Hymenoptera and Coleoptera.

I find amongst my papers a note of the following extract, from Oviedo, touching scorpions, which I may be allowed to append here. I have a lot of notes of other little scraps of natural history, to be extracted from some of the Spanish historians of America, but have not time now to search them out and arrange them. They relate, at least many of them, to the bees of tropical America, but I wish first to study Latreille's paper in Humboldt's Zoologie, &c.; which, at this moment, I have not by me. Some of these bees are said to produce *sour* honey, others are—

Like to those bees of Trebezond,
Which, from the sunniest flowers that glad
With their pure smile the gardens round,
Draw venom forth which drives men mad.

Should I have leisure, I may do this for your next Number, but it may happen that Delta may have something better to do before that time.

Now to the scorpions; and we shall see that Oviedo was fully convinced of the exaggerations of those who talk of fatal effects ensuing from their stings.

"There are in all the West Indies and Terra Firma scorpions, which are what in Castille we call *Aleranes*, and in some parts there are many of them. Concerning this animal, Pliny says, book ii. cap. 25, that it causes death in three days after it has stung any one, and that its sting is always mortal to virgins, and in fact, to women in general: and he says other things of it, of which most will not apply to the scorpions of these parts. For here their sting is not mortal, although it causes much pain for about the space of a quarter of an hour, and sometimes longer. And in these parts I have many times been stung by these scorpions, and I have found out that some give much more pain than others: and this, perhaps, may depend on a person being stung immediately after a meal, or when hungry, or may arise from the state of the scorpion itself; but, be this as it may, no man or woman incurs any danger from it. And I consider the sting of a wasp, (*abispa*,) to cause quite as much pain as that of the scorpion of these Indies, and of some wasps more. But I, as one who have experienced both, consider that the pain from the scorpion's sting lasts longest."

Yours, most truly,

Δ.

Epping, Nov. 27, 1836.

ART. XXXI.—*Further Observations on the Septenary System.*
By EDWARD NEWMAN.

"Quicquid ex Phenomonis non deducitur hypothesis vocanda est."—NEWTON.

Four years have elapsed since the publication of "Sphinx Vespiformis." During this period, although it has been coarsely and virulently criticised, no single attempt has been made to demonstrate, by fair argument, the unsoundness of a single

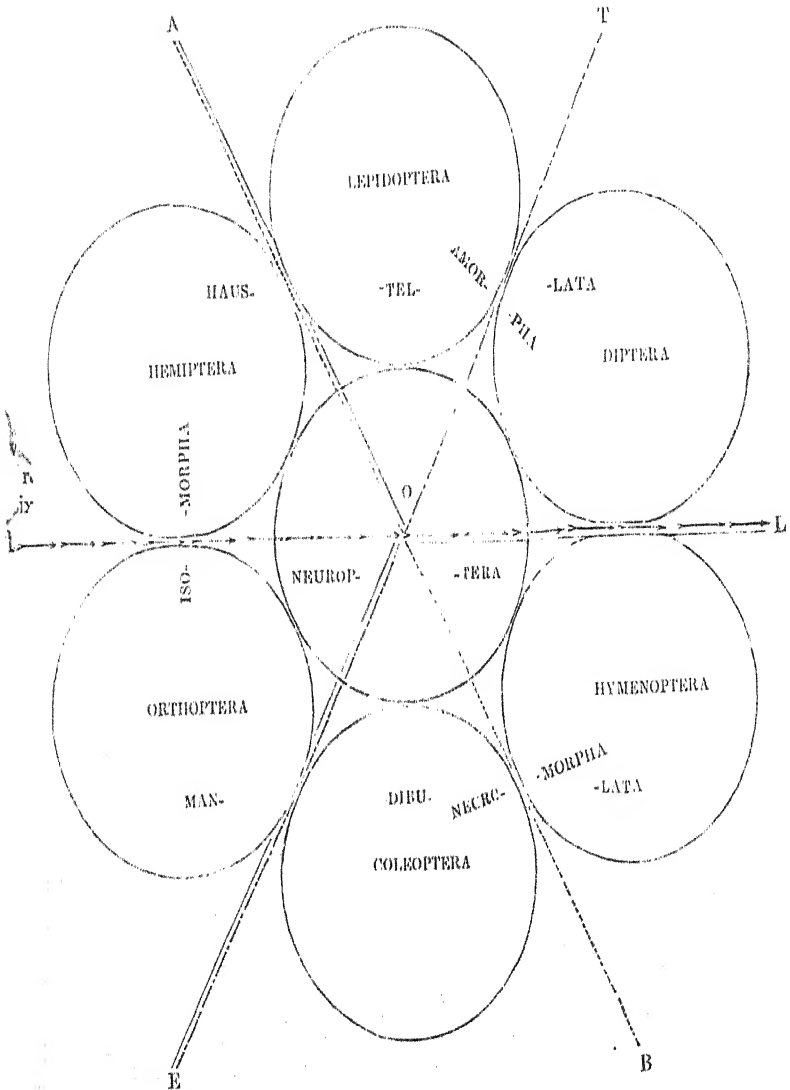
proposition which it contained. The bitter and declamatory language of these criticisms was, doubtless, intended to supersede the necessity of argument, as by this device the various scribes cunningly preclude the possibility of a reply. Still, though there has appeared nothing like a refutation of the proposition contained in "Sphinx Vespiformis," I am unable to boast of success in the way of proselytism. Unwilling that a system, which I believe to be the only true one, should so early sink into oblivion, I have attempted, in the following pages, again to call the attention of Entomologists to the subject. I am well aware there are many excellent Entomologists, who say that system is inapplicable to any useful purpose; and, therefore, that the inquiry is an idle one. Others, however, think differently, and regard system as the high object and aim of their researches. It is to the latter class I more particularly address myself.

It will be my endeavour to avoid entirely the dangerous and difficult subject of affinity and analogy. If either of the words occur, it will be incidentally, and without any reference to their theoretical value. With every attempt at precision of language, it is difficult wholly to exclude words in common use, yet I am persuaded, that a great benefit would be conferred on zoology if every word were restricted to one decided meaning, and employed with that meaning only. In attempting to attain this precision, writing may occasionally appear pedantic, but even this fault is preferable to that of vagueness.

The object of the present article is not to retrace the arguments employed in "Sphinx Vespiformis," but to supply some deficiencies which occur therein. It will not, however, I trust, be deemed an unnecessary prolixity if I here recapitulate the principles of the Septenary System. They are these:— 1st. That all natural groups are divisible into seven minor groups. 2dly. That in all groups thus composed of seven minor groups, one of such minor groups contains beings more perfect than those in the other six. 3dly. That each of the six minor groups contains individuals equally related to the more perfect group, though each probably through some different character. 4thly. That each of the inferior groups containing individuals equally related to the more perfect group, such relation could only be accommodated by placing the more perfect group in the centre, and the others around it, *thus*—

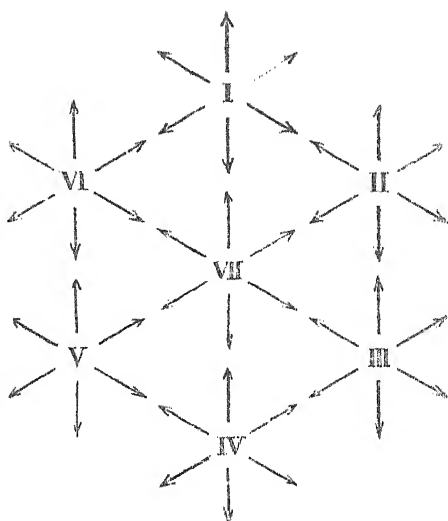
DIAGRAM:

SHewing that Newman's Septenary Division of Insects is in perfect accordance with the Alary System of Aristotle, Linnaeus, &c., the Maxillary System of Fabricius, Clairville, &c., and the Metamorphic System of Ray, Swammerdam, &c.



EXPLANATION.

- A — O — B Alary Line: to the right, *Forewings*, to the left, *Hindwings*, developed.
M — O — L Maxillary Line: above the line, Mandibulate, below it, Haustellate, insects.



By supposing the diagram to contain forty-nine individuals, it will be evident that each individual must be related to at least three others, and if central, to no less than six. The Roman numerals express the seven typical or more perfect individuals, VII. being most perfect of the whole; the arrows express six other individuals around each type, each of them after its fashion related to some other group to which the arrow is pointing.

The arguments whence this view of the subject was deduced, in the pages of "Sphinx Vespiformis," were expressed without that attention to precision, or that reference to detail which such a proposition obviously demands; and I cannot feel surprised that my opinions have made so little progress. I further attempted, in that Essay, to show that the seven classes of insects occupied places in the above diagram, corresponding with the numerals now attached to them: I. Lepidoptera, II. Diptera, III. Hymenoptera, IV. Coleoptera, V. Orthoptera, VI. Hemiptera, and VII. Neuroptera. (*See the diagram opposite*).

The central position of the class Neuroptera implies its superiority to the classes by which it is surrounded; but as this may not be admitted by the whole of my readers, it would, perhaps, have been the most courteous plan to have defined, at length, the grounds on which I have imagined this superiority. As, however, the space which an article of this kind necessarily

occupies is very considerable, I must decline entering, at present, on that very intricate subject; at the same time, of course, relinquishing the very important assistance my views would obtain from the established superiority of the Neuroptera. I cannot, however, dispense with the necessity of taking a cursory view of this interesting class.

The heterogeneous contents of the class Neuroptera are excessively perplexing; but, I find, the more strenuously we attempt to place them naturally, the more nearly will such arrangement accord with that which a Septenary System requires. Latreille divided them into four "natural families." Three of these appear sufficiently precise, "*Libellulines*, *Ephémérines* and *Phryganides*." The fourth, called "*Planipennes*," including *Nemopteryx*, *Bittacus*, *Panorpa*, *Boreus*, *Ascalaphus*, *Myrmoleon*, *Osmylus*, *Hemerobius*, *Psocus*, *Termes*, *Embia*, *Raphidia*, *Mantispa*, *Corydalis*, *Sialis*, *Nemoura* and *Perla*. A glance at these genera will show that this group is a most carelessly constructed one; its very name leads one to expect as much. *Psocus*, *Termes*, and *Embia*, are isomorphous genera, and possess a limited, though various, prothoracic development; their tarsi are tri-articulate. *Perla* and *Nemoura* are also isomorphous, but have a much more extensive prothoracic development; their tarsi are likewise tri-articulate. *Ascalaphus*, *Myrmoleon*, *Osmylus*, *Sialis*, *Hemerobius*, *Raphidia* and *Mantispa* are necromorphous; they have moderate prothoracic development, with the exception of *Raphidia* and *Mantispa*, in which that segment is exceedingly elongate, as in *Collyuris*, *Mormolyce*, and other carnivorous Coleoptera: all these genera have five-jointed tarsi. There is another group still remaining, which consists of *Bittacus*, *Panorpa*, *Boreus*, and *Nemopteryx*. These singular genera agree in the structure of the parts of the mouth, which are prolonged in the form of a beak; their metamorphosis is unknown; their tarsi are five-jointed; their prothorax is restricted as in Hymenoptera. Here, then, we have seven groups, some of which, though very closely allied in appearance, present still those striking structural differences which render it impossible to unite them. I will attempt to sketch an arrangement of these groups.

To begin with the central or typical group, I select the *Libellulina*, as in every way the most perfect; whether we consider their powers of locomotion, or parts of manducation. It

will be observed that each of the remaining groups, in some of their genera, copy, as it were, the quantity of surface and power, as well as reticulation of wing, possessed by the *Libellulina*. The differences in the development of the pro-meso- and metathorax, afford us steady assistance in the distribution of the circumferential groups. The *Ephemerina* possess the minimum degree of prothorax and metathorax. The reverse is the character of the *Perlina*; in these we find the prothorax and metathorax of considerable volume, though not the maximum degree, and the mesothorax proportionally decreased.

The *Ephemerina* and *Perlina* are thus placed in exact opposition to each other. From *Ephemera* we perceive very slight difference in structure, if we pass to *Nemopteryx*, thence to *Panorpa*, and thence to *Bittacus*; and the minute *Boreus* is too closely related to *Panorpa* to be excluded. These four genera constitute the Stirps *Panorpiina*. The hind wings in this group equal or exceed the fore wings in size. From the *Panorpiina* we pass to another group, distinguished by a still greater development of prothorax and metathorax, a less development of mesothorax, a greater perfection of mouth, and a decided necromorphous metamorphosis. This group includes the *Myrmeleonina* and *Corydalina* of Mr. MacLeay. The larvae are among the most singular productions of nature. They are exceeding voracious, subsisting on the juices of other insects which they kill: they conceal themselves on leaves, under rubbish, or construct pitfalls in the earth. They have mandibles perforated at the extremities, through which they suck the juices of their victims. *Raphidia* seems, in some degree, a departure from the typical character of this group, its larvae, according to Mr. Waterhouse, feeding on the bark of trees. On this subject I cannot speak from observation; but, if the description is correct, it is a singular proof of the waywardness of nature, which seems to defy our arbitrary laws. *Sialis* has a quiescent pupa. Thence we pass to *Perla*, or rather the *Perlina*: here the metamorphosis is strictly isomorphous; the mouth strictly mandibulate, the pro- and metathorax fully developed, and the mesothorax restricted. From the *Perlina* we proceed to *Embia*, thence to *Termes*, and from *Termes* to *Psocus*. The Genus *Embia* exists without a history; its general habit points to *Termes*, as the type of its economy, but at this we can only guess. The connexion between *Psocus*

and *Perla* is readily traced, by means of this genus and the genuine *Termites*. In many of the *Psoci* the mouth undergoes a complete change, the component parts become linear and rigid. By this character, as well as the narrow prothorax, increasing mesothorax, and often folded hind wings, we are prepared for the obsolete mouth, obsolete prothorax, fully developed mesothorax and folded hind wings, which characterise the Stirps *Phryganina*. The circle is here complete; from the *Phryganina* to the *Ephemerina*, the transition is perfectly natural.

I am well aware how very little this tends to the corroboration of any system. I am as unable as my readers to see any striking relation between these groups and the classes to which I suppose they lead. All that I assert is, that, attending solely to structure and metamorphosis, the foregoing appears a natural arrangement of the principal groups into which Neuroptera may be divided. It possesses points which indicate the truth of a septenary arrangement, an assertion that we shall see exemplified as we proceed. To myself these gradual indications appear of paramount importance. An insect may hereafter be met with which shall possess the hind wings of Neuroptera, with a pair of rudimental or protecting fore wings; the prothorax may be that of Coleoptera, the head and mouth those of *Mantispa* or *Raphidia*. These peculiarities, coupled with the relations shown above, would render such a genus invaluable; without them it would be a mere stumbling-block, like *Stylops* and *Atractocerus*.

The supposed position of the classes surrounding Neuroptera may be seen by the diagram.

The arguments on which the proposed position of the seven classes was defended, were drawn up with scarcely a reference to those important characters on which natural arrangement essentially depends. On more attentively considering the subject, I found that the exact points of union between neighbouring classes was a subject of very limited importance, while the approximating location of great groups was the grand object to achieve. With this view I determined to learn before again attempting to teach. I sought out, and, I think I may say, mastered every arrangement of insects that has been transmitted to us. When we look back at our predecessors in Entomology; when we consult the works of Aristotle, Linneus, Fabricius,

Ray, Swammerdam, Latreille, Cuvier, and a host of others, we cannot for a moment hesitate in acknowledging that they were men well versed in the science which they professed to teach. As regards divisional characters no recent writers have attempted to undervalue those which these authors proposed. On the contrary, all our systems, however various, have reference to the writings of these great men. If we build systems of our own, we are compelled to use their materials, or rather their writings are the materials with which we build.

It requires long and close attention to any branch of Natural History, to ascertain what characters are the least liable to change. Those which remain unaltered, or but little altered, while all around them has undergone repeated change, are invaluable. On the contrary, those parts over which generic, specific, and even sexual distinction holds an unlimited power of change, are amusing and instructive as objects of study; but in the formation of great and important divisions, even colour and size could not be more utterly valueless.

Though Entomologists, who have attempted a general arrangement of the objects of which their science treats, have taken various views of those differences on which divisions are founded, all appear to admit the truth that system depends on differences, but scarcely two seem agreed as to what differences, or what mode of differences, are of paramount importance. Some prefer for purposes of division the differences observable in the structure of the mouth, some the differences in the structure of the wings, or of those parts whence the wings arise; others again have insisted that the only true guide is to be found in the differences of metamorphosis; and a fourth class of systematists have availed themselves of all these differences. These last are certainly in the right. I say this not because their views correspond with my own, but because we have abundant proof that nature will not be bound by any of our arbitrary and rigid laws. We must trace her in *all* her infinitely varied creations; and, if we would understand her, we must avail ourselves of each.

With a view to work out the systems dependent on each series of differences, pointed out by the great men to whom I have already referred, I have endeavoured to trace the characters in question through their every change. The result of the inquiry has been published in three chapters of consider-

able length: in these it has been my wish clearly to explain the principal differences that are to be found among insects in the structure of the segments, and the mouth, and in the stages of metamorphosis. I would not be guilty of the impertinence of referring to my own works, but that they really form a part of my subject, and, united, constitute the source from which my present observations are drawn. Moreover, the three chapters in question are to be found in the prior pages of this Magazine, and may fairly be considered introductory to the present inquiry. The chapters are these—"Art. XLVI. Osteology, or External Anatomy of Insects." Ent. Mag. Vol. I. p. 394. "Art. VI." on the same subject. Ent. Mag. Vol. II. p. 60. "Art. II. A few words on the Transformation of Insects." Ent. Mag. Vol. III. p. 12.

In the first of these chapters I have detailed the principal differences occurring in the segments of which every insect is composed, both as regards bulk and form; particular stress being laid on the differences of those segments which bear the implements of locomotion, and on those differences which exist in the structure and design of such implements. On these differences is founded the Alary System. In the second chapter the differences occurring in the mouth have been carefully described, and this not solely with a view to their subsequent employment as the support of a theory, but also with a design to introduce a uniform anatomical nomenclature of the various component parts. On the differences in the mouth is founded the Maxillary System. In the third chapter the different modes of transformation are described and compared. On these differences is founded the Metamorphic System. The facts detailed in these chapters have, without exception, (as far as I recollect at the present moment,) passed under my own observation, and are not dependent, in any degree, on the assertions of others. This I mention, because facts so stated should be subject to contradiction only from those who can speak from observation, and should not be disputed because previous writers may have stated them differently. And here I may further state, that the inquiry was, in every instance, made with perfect fairness, and a fixed determination to abandon such parts of my proposed system as would not harmonize with these three great and indisputable systems. So far from avoiding the application of any other extensive series of differ-

ences to my proposed location of the classes, I would willingly test it by a dozen such series, could they be shown me. I know of none besides those I have here adduced. This I consider a triumphant superiority over every restricted system, because the authors of such are compelled to abandon *one* or *two* of these highly natural series of differences. Not to mention minor Entomologists, I refer the reader to Swammerdam's published opinion of the Maxillary System; Fabricius' opinion of the Alary System, and MacLeay's of the Metamorphotic System. Each of these great men condemns one principal character as proving no natural affinity; and each differs in the one so condemned.

The object of this article is, to show that the Septenary System is not dependant on any real or fancied similarity of external appearances, but will bear the most rigid scrutiny, founded either on the structure of those parts in the perfect insect, the differences of which have always been considered of paramount importance, or, on the still grander and more decided differences of transformation itself. If it appear at the conclusion that these tests, instead of invalidating, establish the propositions previously made, I hope there will be found those candid enough to admit that such propositions are not founded in error.

Of the Systems in question, I think the Alary, dependent on the structure of the wings, has been the most widely employed; and I will, therefore, suppose it the most perfect. It will be needless to enumerate the great men, from Aristotle to our contemporaries, who have employed the differences of the wings as divisional characters; it is amply sufficient for my purpose, that the classes now universally employed are founded on these differences; and that from these differences arise the names by which the classes are at present universally designated. Now although it is to the wings we must look for the differences in question, the Entomologist will not be contented without a reference also to the parts which bear them. It will be readily seen that a series of differences must occur in general structure, in order to accommodate the different degree of exertion for which the wings may be required. We find the most exact and symmetrical correspondence between the differences in the pairs of wings, and the difference in the segments which bear them, and even in those of adjoining segments. Thus so far

from the differences in the pairs of wings at all interfering with each other, or with those in the prothorax, mesothorax and metathorax, and therefore requiring a different chain of relations, we find that all of them follow a similar system of variation, and each, used as a divisional character, would dissect the figure in the same way. The following modications of structure are almost invariably found co-existent in the same group.

Prothorax nearly obsolete, or appearing as a narrow ring immediately behind the head : mesothorax fully developed and very conspicuous : metathorax a narrow ring : fore wings ample, strong ; the chief, sometimes the sole instruments, of flight : hind wings nearly obsolete.

These characters are, in a great measure, dependent on each other. The circumstance of the fore wings being the chief or sole organs of flight, insures an increase or maximum of volume in the mesothorax, and a decrease in the volume of the prothorax. The rudimental and inactive character of the hind wings is accompanied by a decrease or minimum of volume in the metathorax. These characters are those possessed by the class Diptera : we will, therefore, draw a diagonal line through the diagram from A O B, and we shall find that all insects possessing ample fore wings, and a maximum of mesothoracic development, are on the right side of the line.

The characters so fully possessed by the class Diptera, are also in a great degree observable in Hymenoptera and Lepidoptera ; the power of the hind wings, however, has greatly increased, and these become implements of flight, little inferior to the fore wings ; the mesothorax also yields a great portion of its volume to the metathorax. Part of the class Neuroptera, the *Phryganina*, the *Ephemera*, and the *Panorpina* possess the whole of the characters in question, but in a degree much modified, in accordance with their supposed situation in the figure. We also find a portion of the Hemiptera, (I allude to the true *Cicadites*,) possessing the Dipterous character of mesothoracic development ; and a corresponding portion of the Hymenoptera, the *Cephites* and *Sirecites*, possessing a character belonging to the classes below the line, that of prothoracic development. With these exceptions a complete dichotomy is effected by the alary line marked A O B. The exceptions, beautifully balanced as they are, serve to confirm rather than invalidate the divisional character.

The opposite characters to those possessed in the highest degree by Diptera, and in the second degree by Lepidoptera and Hymenoptera, may be given thus:—

Prothorax fully, often prodigiously, developed: mesothorax reduced to a narrow ring: fore wings weak, often reduced to mere rudimental appendages, generally incapable of employment as implements of flight: hind wings extremely voluminous, and usually the only organs of flight.

The Orthoptera possess these characters in the maximum degree: we find in Coleoptera and Hemiptera decidedly the same characters, though occasionally in some degree modified. Some of the Neuroptera, more particularly the *Perlina*, have a fully developed prothorax. The structure of this last named group, their quadrate prothorax, their caudal setæ, their ample hind wings, point out a near relation to various genera in Orthoptera. It will, therefore, be impossible to exclude them from that portion of the central circle in the diagram which approaches Orthoptera. The whole of the winged insects, with the intentional exception of some of the more typical forms of Neuroptera, are thus disposed of; and, I trust the candid reader will admit, not only without the slightest violation of the principles of the Alary System, but in a manner to support that ancient and excellent system, and proclaim more forcibly than ever its paramount importance.

Let it not be supposed for a single moment, that I wish, in thus insisting on general laws, to beg the question founded on exceptions. When I speak of Orthoptera, I would be understood to mean the mass of Orthoptera, the *Locustites*, *Achetites*, *Gryllites*, *Blattites*, *Forficulites*, &c. The *Spectres* are an exception. The singular structure of these animals might be made matter of much speculation. By general character, although imperfect, we may define masses; but how often it happens that some individuals contained in those classes will defy our utmost precision!

The prothorax and metathorax follow so exactly the same laws, and are so completely interwoven with the differences of the mesothorax, that it would be nothing more than useless repetition to pursue the subject farther. The line already em-

ployed would serve for each. I will, therefore, proceed to the next division of my subject.

Fabricius, as I have stated, thought and proclaimed that the Alary System was defective and insufficient. In its place he attempted the introduction of another, the Maxillary System. This was to smoothe away all asperities in the path of Entomology. He divided true insects into eight classes, five of which were comprised in one group, and three in another. The first group contained Coleoptera, Orthoptera, Hymenoptera, and Neuroptera, the last being divided by the separation of the *Libellulina* from the remainder of its contents. The second group contained Lepidoptera, Hemiptera, and Diptera. Subsequently, Clairville, following up this Maxillary System, reunited the contents of Neuroptera, and reduced the number of classes again to seven. To the seven classes both Fabricius and Clairville gave new names, which for the sake of simplicity, are here omitted; and Clairville adopting the groups of classes pointed out by Fabricius, named them *Mandibulata* and *Haustellata*. He placed his classes thus:—

1. MANDIBULATA.

- I. Coleoptera.
- II. Orthoptera.
- III. Neuroptera.
- IV. Hymenoptera.

2. HAUSTELLATA.

- V. Diptera.
- VI. Lepidoptera.
- VII. Hemiptera.

The collocation of classes, or of minor groups, is supposed to indicate relation. It is to be observed that every relation thus indicated in the Maxillary System is preserved in the Septenary. I believe it is now pretty generally admitted, the term *Mandibulata* is not sufficiently precise. All insects are furnished with mandibles, and therefore all are mandibulate. “The division is a dichotomous one. Like all dichotomies it consists of a positive and a negative. It is this:—in the mandibulate classes the mandibles *do*, in the haustellate classes the man-

dibles *do not*, move horizontally." The maxillary line M O L in the diagram divides the seven classes agreeably to this definition, leaving Clairville's *Mandibulata* on one side, and his *Haustellata* on the other. In Neuroptera the *Phryganina* and *Ephemerina*, whose mandibles are obsolete or rudimental, and possess no motion, range with the Lepidoptera, &c.; and the *Pertina*, *Hemerobiina* and *Panorpina*, which have strong mandibles, formed for active employment, range with the Orthoptera, Coleoptera, and Hymenoptera. It is here to be observed, that the supposed typical or central group of Neuroptera, and therefore of insects, is decidedly mandibulate. The maxillary line, consequently, cannot pass directly through the centre of this class. Here, as in the prior figure, the line has more decided reference to the circumferential classes than to the central.

It has been, I trust, fully shown in my second letter on Osteology, that "the mouth of insects is not in its differences confined to two plans." The mouth in each class differs widely, and the transition of the various parts from one form to another is to be traced with the greatest ease. Yielding, however, to the trammels of the Maxillary dichotomy, in order to show that it is in perfect consonance with the Septenary System, I will attempt to compile characters by which to distinguish from each other the contents of the classes separated by the maxillary line.

Mandibles fully developed, strong, corneous, possessed of horizontal motion, formed for mastication: maxillæ corneous, possessed of horizontal motion, occasionally formed for detrition or mastication.

Such is preeminently the character of the insects comprised in the class Coleoptera. As we pass right and left, we find these characters strongly exhibited in the Orthoptera and Hymenoptera. In a portion of the Hymenoptera, the bees, the maxillæ evince symptoms of departure from the typical character. They become leathery, lengthened, linear, and united with the ligula form as in Diptera, Lepidoptera, and Hemiptera, a suctorial tube. Above the maxillary line the following characters may serve:—

Mandibles and maxillæ linear, weak, leathery, often elongate, incapable of horizontal motion, and also of mastication or detrition.

The type of this kind of mouth is found among the Lepidoptera, where the maxillæ are frequently of prodigious length, and convolute; but as we descend the figure right and left, we find this typical character considerably modified in the Hemiptera and Diptera, though still abundantly different from any form of mouth existing among the classes below the maxillary line. The position of the classes in the Septenary System is, therefore, in perfect accordance with the Maxillary System as promulged by its originators.

The third grand system of Entomology is called the Metamorphotic System. Chronologically, this system intervenes between the Alary and Maxillary Systems. These two systems being founded on the structure of the perfect insect could not be separated. The Metamorphotic System, therefore, though chronologically the second, must here rank as the third. It appears that the merit of the invention of this system is due to Swammerdam; but the definitions employed by this philosopher and his contemporary, our illustrious countryman, Ray, are not sufficiently precise to furnish tests by which to try the value of another system. The line TOE in the diagram separates the six circumferential classes into those which, in the language of Swammerdam, possessed a *complete* or an *incomplete* metamorphosis; and, it may be stated, that no single item in the systems of Ray and Swammerdam is at variance with the Septenary System, except such untenable divisions as have long been abandoned by universal consent,—such, for instance, as the singular location of portions of the *Ichneumonites* in separate classes. In this case it becomes necessary to have recourse to more precise and recent definitions.

It has been seen in the chapter to which I have before alluded, that the differences of transformation divide insects into three very natural groups; the characters of which are thus defined:—

1. AMORPHA, in which the penultimate state is provided neither with mouth nor organs of locomotion: consequently it neither eats nor moves, nor does it bear any resemblance to the perfect state.
2. NECROMORPHA, in which the penultimate state is provided with mouth and organs of locomotion detached from the body, but so enveloped in a case that it cannot employ them. The resemblance, therefore, to the perfect state is very considerable, excepting in the total want of motion.

3. ISOMORPHIA, in which all the stages are active and voracious, and of similar forms.

Besides these there is a fourth group, or rather there is a class containing orders approaching all these divisions, besides a typical order peculiar to itself. This heterogeneous group is called Anisomorpha.

It now remains to be seen whether this Metamorphotic System, differing in every respect from either the Alary or Maxillary, founded on a totally different basis, and offering a trinary instead of dichotomous division; it remains, I say, to be seen, whether this system will at all invalidate the propriety of a circular and central distribution of these seven classes. It should be observed that, although the terms and definitions in the Metamorphotic System are proposed by myself, the system contains no deviation from the system of Swammerdam, except in a few minor points, to which I have previously alluded, where his view is known to have been erroneous.

The amorphous classes are Lepidoptera and Diptera; the necromorphous, Hymenoptera and Coleoptera; and the isomorphous, Orthoptera and Hemiptera. Now, a single glance at the diagram will shew how the Septenary arrangement of the classes harmonizes with the great character of metamorphosis. Where else than in the centre could that anisomorphous class be placed, whose character, as defined by one of our profoundest writers, is "varied metamorphosis." The diagram is thus a third time divided by a genuine and perfectly natural character, and now by a ternary and not dichotomous line A O E and A O L. With respect to the contents of the anisomorphous class, it is well known that the *Termitina* and *Perlina* undergo a nearly isomorphous metamorphosis; the *Phryganina* are nearly amorphous; the *Ephemerina* have an anomalous metamorphosis, it is true, but it is also true, and singularly corroborative of the correctness of the situation which the Septenary System requires that they should occupy, that this anomalous metamorphosis is precisely intermediate between that of the *Libellulina* and that of the *Culicina*. The metamorphosis of the *Panorpina* appears to be unknown; that of the *Hemerobina* is necromorphous, thus indicating their proximity to the Coleoptera.

Having thus shown, and I trust I have shown, that the Septenary System is not only borne out, but in a great measure

dependent on the Alary, Maxillary, and Metamorphotic Systems, I beg to say, that on these three systems are founded all others which owe their existence to scientific inquiry, unassisted by theory. Latreille in France, Burmeister in Germany, and Kirby in England, themselves, *longo intervallo*, at the head of Entomology in their respective countries, have reviewed the labours of others, and each proposed what he imagines a more perfect system than any previously existing. These three systems have been styled *Eclectic*; they are very similar, and are all of them *founded exclusively* on those characters which I have shown to constitute the Alary, Maxillary, and Metamorphotic Systems, and which harmonize so beautifully with the Septenary. These Eclectic Systems are entirely practical; there appears no heaven of theory to be found in either of them. They may be called linear series of insects, arranged with every possible attention to structural differences.

These Eclectic Systems, however, do not numerically accord with the Septenary; and this difference does not arise solely from the erection of isolated animals of anomalous structure, as the earwig, flea, *Stylops*, &c., into groups of equal value with Hymenoptera and Coleoptera, containing almost myriads of species. With this practice I consider it would be childish to combat. A large group, *Trichoptera*, comprising the *Phryganina*, has been separated from Neuroptera by Mr. Kirby. This author has not, at least I cannot find that he has, explained why the *Phryganina* should be separated from the Neuroptera generally; but he uses very elaborate arguments to prove the propriety of their being separated from the *Perlina* in the same class. "Whoever examines," says Mr. Kirby, "the several tribes into which Mr. MacLeay has divided the Neuroptera, will observe, in all of them, a distinct prothorax, a circumstance which they possess in common with those orders (classes) that use their mandibles for mastication; whereas, in those which do *not* use them for mastication, as the Hymenoptera, or that take their food by suction, this part is replaced by a mostly narrow collar forming a part of the alitrunk: the existence then of the *prothorax* in the *Perlidae*, and of the *collar* in the *Trichoptera*, affords no slight presumptive evidence that they belong to different orders (classes)." I think this argument will scarcely bear a keen investigation. The premises are not sufficiently sound. It may be objected that the pro-

thorax of the *Ephemerina*, among the Neuroptera, is often indistinct, or formed like a collar. 2dly. That Hymenoptera may be found which masticate with their mandibles. 3dly. That the *Cimicida*, *Cercopida*, and myriads of similar insects, which take their food by suction, have an immense, often a preposterous, prothorax. These, therefore, I imagine are insufficient grounds for the separation in question. But allowing the separation to take place, I still find Mr. Kirby placing the *Phryganites* exactly where the Septenary System requires their presence. At p. 422 of the same volume, in some observation on analogy, the new division *Trichoptera* is entirely omitted, being again merged in the Neuroptera. This is a proof of the exact value at which it was estimated by its author.

Another class, or division, of equal value with the Lepidoptera, Diptera, &c. occurs in Mr. Kirby's arrangement. I allude to the *Aptera*, a group in which he includes *Thysanura*, *Anoplura*, *Arachnida*, and *Myriapoda*. I rather regret having to mention this division at all, for reasons which it would appear impertinent in me to avow. Let it be sufficient that I state my adherence to the arrangement of these groups, which has been long before the public in "The Grammar of Entomology," and therefore, that as constituting one of the classes (or orders, as they are termed by Mr. Kirby) of true insects, I consider the *Aptera* out of place. The primary divisions of insects are thus reduced to seven.

Let us now suppose seven individuals before us, instead of seven groups of individuals, and let us express them by the numerals I. II. III. IV. V. VI. and VII. Some learned man writes a book and argues very elaborately that the insect VII. is constructed so exactly similarly to the insect I., and the insect III., that it must, without doubt, be placed between them. Just as the practical Entomologist is about to adopt the suggestion, another argumentative work is placed in his hand, and now he finds the subject may be viewed in another light. The first writer was right as far as he went, but he had not looked in the insect's mouth; "and here," says the second, "is the sole secret of arrangement." The second writer proves, in fine, that the insect VII. comes between the insects III. and V. An angry discussion takes place, which terminates in the second writer's gaining the day, and promulgating his opinion. Now a third enters the field of controversy; he boldly asserts

the others knew nothing at all of the matter, that he has a peculiar view, founded on metamorphosis, which supersedes the necessity of further inquiry, and which establishes the place of the insect VII. to be between the insects IV. and VI. He demonstrates very clearly that both the others were wrong. Opinions innumerable are given on the subject; books are written; every opinion, as it emerges from the press, is proved correct. However, some persons venture to suppose, that as the writers differ so widely they cannot *all* be right. These persons are wrong; for the various characters in question can be accommodated by placing the insect VII. in the centre, and forming the others into a circle around it; then all the relations, on which the writers so strenuously insisted, will be accommodated. Is this the work of chance? Will any Entomologist, blessed with reasoning powers, contend that this wonderfully harmonizing of three diametrically, fundamentally, opposed systems, is the effect of accident?

Then abandoning this restricted view of the subject, let me ask if it is by accident that the Septenary System so entirely harmonizes with the three diametrically opposing systems on which all our Entomology is built?

It may be contended, and probably proved, that opinions were hazarded in "*Sphinx Vespiformis*," which are not supported in this article. It may also be contended that views are now broached which have no prototypes in "*Sphinx Vespiformis*." Be it so: I have no objection. I should consider it highly discreditable to adhere to views which more precise information rendered no longer tenable. As far as ideas go, I feel some doubt whether I did not once attach more value to the circular chain of relation, than I do at present; the more important characteristic of the Septenary System now appears, to me, to be radiation from a centre.

ART. XXXII.—*Notes about Cillenum Laterale and a submarine Species of Aleocharidæ.* By A. H. HALIDAY, M. A.

IN the month of May last, I found *Cillenum laterale* common under stones and tufts of sea-weed on the Port Rain sands (County Dublin), near low-water mark. They prey upon

sandhoppers (*Talitrus Locusta*, Leach,) seizing them by the soft parts of the underside, and, in this way, are able singly to master game many times their own bulk. Sometimes three or four beetles may be found in concert attacking a sandhopper of the largest size. The tide retiring has scarcely uncovered the sand, when these little depredators are abroad from their hiding-places and alert in the chase. A great part of their existence is passed under the sea, and the mode in which they obtain the necessary supply of oxygen during their prolonged submersion, when the small quantity in the air-bubble which they may convey with them is exhausted, seems to deserve a more particular investigation.^a It was at the same time and in the same situations that I detected the small brachelytrous beetle, which I have named and characterised below, supposing it to be undescribed. It is evidently allied to the genus *Gymnusa* (Karsten,) but while the latter assumes the appearance of the adjoining family *Tachyporidae*, the present has more the air of the *Oxytelidae*.^b The peculiar character of the mouth is more developed than in that genus, the appendages of the labium retaining nothing in their form to recall their typical function as palpi.

GEN.—DIGLOSSA.

Os rostratum. Palpi maxillares elongati; articulo 3 subelato, 4 obsoleto: palporum labialium loco laciniæ 2 setæ os superantes; antennæ extrorsum vix incrassatæ, articulo 2 longissimo: thorax postice attenuatus: abdomen lineare: tarsi 4-articulati, articulo unguiculare subæquali.

Sp. 1. *Diglossa mersa* (Long. 1 lin.)

Dull black, slightly pubescent; head, thorax, and elytra minutely punctulate: palpi and legs dusky ferruginous, the middle of the shanks, the thighs, and antennæ darker, the mandibles and feet lighter: head rounded at the sides, without a distinct neck: eyes minute: antennæ rather longer than the head and thorax, slender,

^a Consult on this head the remarks on *Aepus fulvescens*, a species of similar habits, by Mr. Audouin. (Nouv. Annales du Museum, iii. 117.)

^b Observe the facts recorded in this Magazine, Vol. II. p. 180, relative to the submarine habits of *Hesperophilus*.

very little thickened externally; the 2d joint the longest, clavate; 1st nearly as long and more robust, cylindric; 3d shorter, obovate; those which follow very short globose, the anterior ones gradually broader and oblate; the last again longer, globose-ovate: labrum transversely quadrangular, a little hollowed out in front: mandibles produced beyond the labrum, slender, acute, the tip slightly incurved, a small tooth on the inside beyond the middle: maxillæ very long, the junction of the scape and stern projecting in an angle from the cheek; the blades very slender, the outer setaceous, with its first joint short; the inner acute and slightly incurved at the extremity; the inside bordered sparingly with minute spines: palpi about as long as the head, slender; the 1st joint minute, the 2d and 3d of equal length, the latter slightly clavate, 4th entirely concealed: mentum transversely quadrangular, narrowed in front, with the margin straight: ligula ———? palpi represented by two parallel spines, so long as to pass beyond the extremity of the mandibles: thorax narrower than the head or elytra, longer than broad, narrowed behind (oblong-obcordate); elytra together, almost quadrate, the posterior angle not evidently notched: wings none: abdomen nearly as long as the rest of the body, linear, only the last two segments tapering: legs not long, shanks pubescent, foreshanks notched and spinous at the tip: fore feet exceedingly short, the joints scarcely distinct: hind feet not half as long as the shank, four-jointed, the last joint shorter than the first, but more robust; the claws strong and hooked.

Habitat in arenis maritimis (Hiberniæ) aestu alterno opertus et reiectus.

A. H. H.

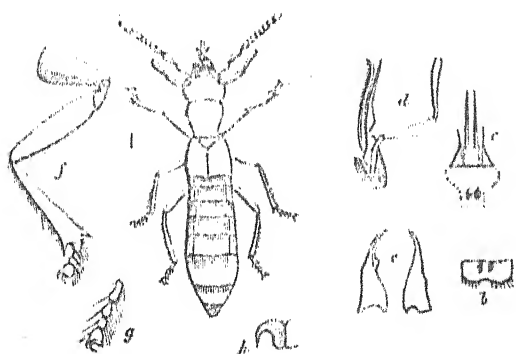


Fig. a. *Diglossa mersa*.

b—e. Details of the mouth.

f. Fore leg.

g. Hind foot.

h. A claw.

ART. XXXIII.—*Note on the Economy of Gyrinus Villosus.*
By the Rev. A. W. GRIESBACH.

SIR,—In Vol. II. pp. 530, 531, of the Entomological Magazine, is a communication by Mr. Haliday, describing a curious fact in relation to the economy of *Gyrinus Villosus*. The following observation, accidentally made by myself, of the sort of place in which that insect, *sometimes* at least, undergoes its metamorphosis, may be read in connexion with it.

On the 21st of May last, I was by the side of the river Derwent, which is distant about one mile from this village; and seeing an old dead willow tree, I pulled off some of the bark, and poked about among the decayed wood, to see if I could find any thing. There was not much in it save “wood lice,” (*oniscus*?) and three small cocoons made of a whitish silk, interwoven on the outer part with minute fragments of the decayed wood. These cocoons were attached to each other, or were at least in contact, and contained what (without much examination) I mistook for the pupæ of *Anobium tessellatum*. I brought them home and put them into a pill-box, which I deposited in a drawer, and forgot. However, by a mere chance I opened this box about a month ago; and in it were three specimens of *Gyrinus villosus*—two quite perfect, the other with crumpled elytra. They were as dark coloured as the species usually is, but all of them were dead.

The willow-tree in which I found the cocoons was a yard, perhaps, from the edge of the river, and the cocoons were about two feet from the ground, in the decayed wood of the tree.

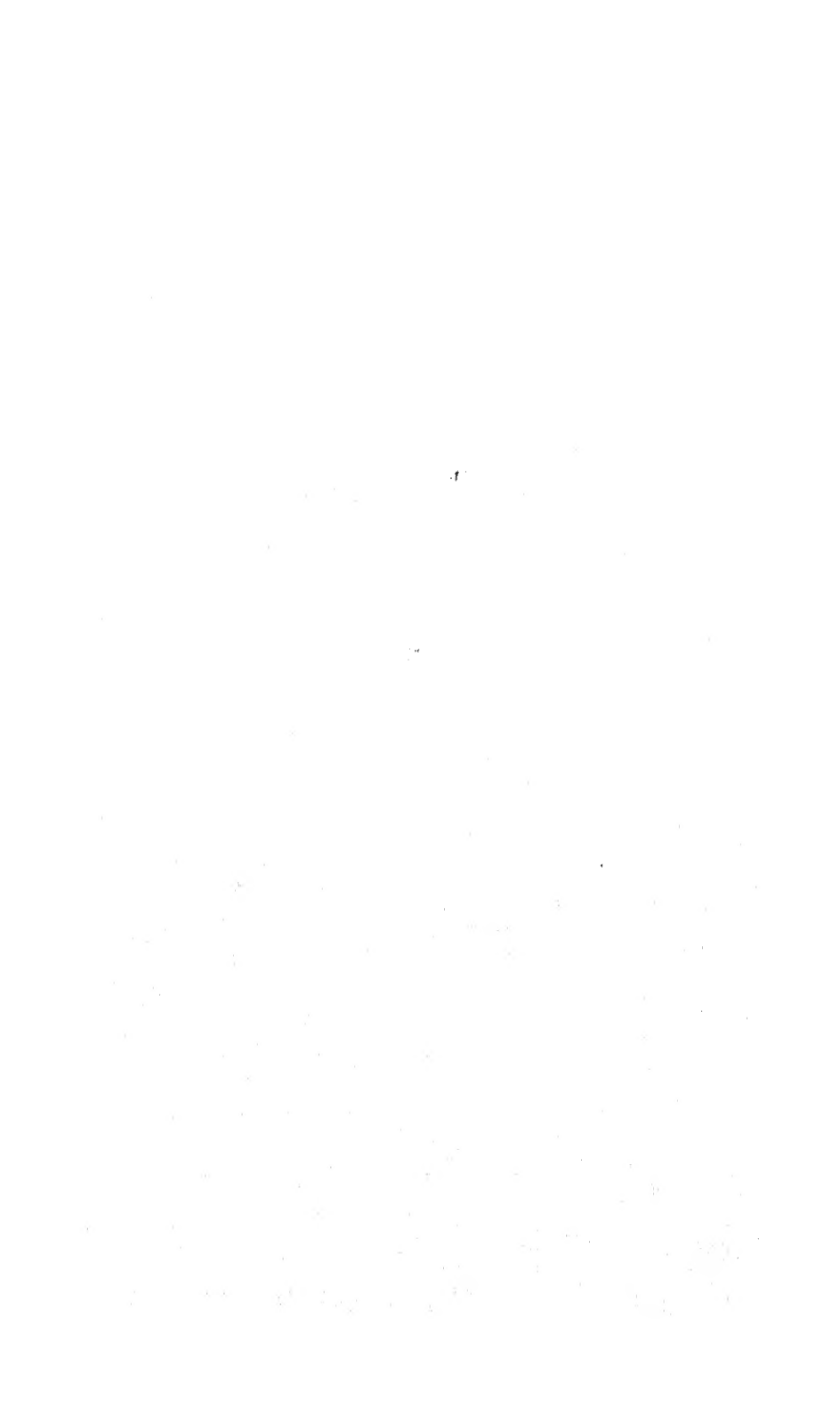
On the strength of this fact, I am disposed to agree with Mr. Haliday, that the specimen of *Gyrinus villosus* (which is the subject of his communication) did not go through its changes in the shell in which it was found. What it really was doing or about to do—whether its being there was “an accidental occurrence,” or an indication of some “peculiarity in the habits of the subgenus” to which it belongs—must, I suppose, remain for the present, mere matter of conjecture.

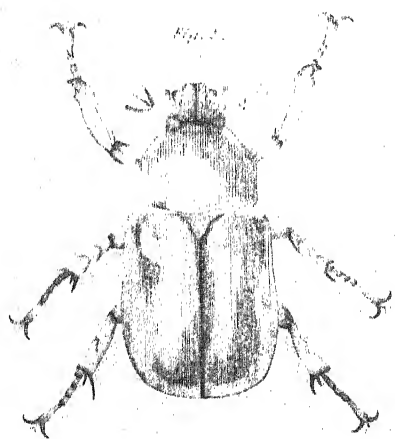
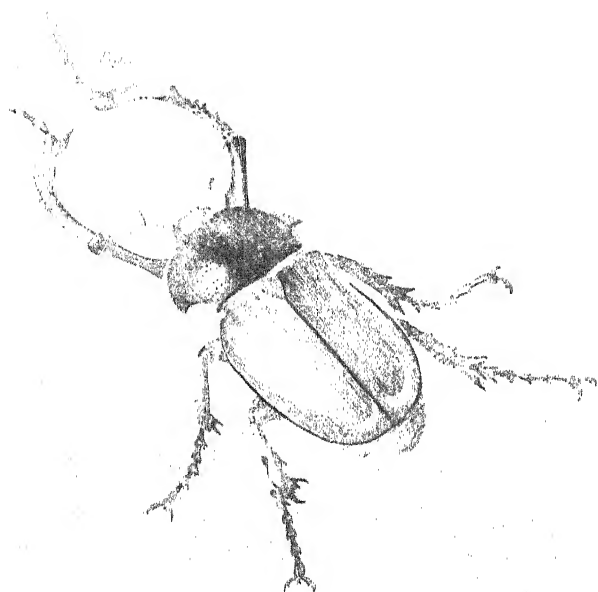
I am, Sir,

Your obedient servant,

A. W. GRIESBACH.

Westow, near Whitwell, Yorkshire,
18th August, 1836.





ART. XXXIV.—*Note on Elater crocatus of Zeigler.*

By THOMAS DESVIGNES.

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—It having been stated by my friend Mr. Shuckard, in No. 16 of the Entomological Magazine, that I had taken *Elater rufipennis*, in some abundance, in Shirewood Forest; I beg to state, that the Elater in question is not *rufipennis*, but *E. crocatus*,^a (Zeigler,) making a new species to this country. It has been previously captured by my friend Dr. Howitt, of Nottingham, in the same locality, who was unacquainted with its specific name. Your inserting this observation of mine, will oblige

Your obedient Servant,

THOMAS DESVIGNES.

No. 2, Golden Square,
November 17, 1836.

ART. XXXV.—*Description of two Scarabæi in the cabinet of Samuel Hanson, Esq., M.E.S., &c.* By EDWARD NEWMAN.
(See plate XIV.)

ALTHOUGH the two *Scarabæi* figured in the plate do not appear to be characterised in any of the descriptive lists of the genus which I have seen; yet I think it highly probable that one, or both of them, may have been named in some detached paper, with which I have not chanced to meet. It is, therefore, with considerable reluctance that I propose names for them, seeing that they are so likely to sink as synonyms.

The form of Figure 1 is so exceedingly different from the usual conformation of the *Scarabæi*, that I shall venture to describe it under a new generic name.

GENUS.—*PROPOMACRUS*. Newman.

^a This name I obtained through the kindness of the Rev. T. W. Hope.

Caput parvum inerme, prothorace fere reconditum : mandibulae maxillaeque haud clypeum attingentes reconditae, mihi invisae : maxilpalpi (quasi) 3-articulati ; articulo 1^{mo}. obconico ; 2^{do}. vix crassiori, liquido breviori ; 3^{io}. elongato, incrassato subtruncato : labipalpi (quasi) 3-articulati ; articulo 1^{mo}. 2^{do}que. obconicis, 3^{io}. elongato apice rotundato : pedes longi ; tibiis angulatis, spinis validis armatis : protibiis longissimis, incurvatis, dentatis, unguiculis omnibus *duobus* apicibus, acutis, valde curvatis, subaequalibus ; plantula inter unguiculos brevis, apice bisetosa. Scarabæarum neque antennae nec profecto prothorax, distributionis discrepantiae exhibent. An. *Euchirus* celeberrimi *Kirbyi* ?

Sp. 1. Propo. Arbaces. *Brunneus glaber ; prothorax corpore via latior, valde convexus, inermis, rugose punctatus, lateribus subserratis, angulis posticis valde, semicirculariter emarginatis, subtus pilis aureis vestitus ; protibiae subtus pilis aureis vestitae.*
Tab. xiv. Icon. 1.

This beautiful insect nearly corresponds in structure with the *Scarabæus longimanus* of Linnæus ; a sketch of the anatomy of which has been obligingly handed me by Mr. Westwood ; it is, however, I am led to believe, a perfectly distinct species. It is said to have been taken at Smyrna, but appears to me rather more of a Brazilian than European or Asiatic form. The only specimen I have seen is in the rich cabinet of Mr. Hanson.

GENUS.—SCARABÆUS. *Linnæus.*

I know of no group in Entomology that calls so loudly for further generic division as that immense mass known by the common appellation of *Scarabæus*, or, according to some authors, *Dynastes* ; and, in Fabricius, described under the name of *Geotrupes*. The separation of an isolated species or two as the proposed genus *Propomaerus* for the reception of *Arbaces*, and perhaps *longimanus*, is altogether insufficient, and is a task from which I would most willingly have shrunk.

Scarabæus Crcesus. *Totus testaceus ; pedibus villosis.* Tab. xiv.
Icon. 2.

There are several examples of this fine insect in the London cabinets, all of them, I believe, imported from Jamaica by Mr.

Hanson, and without exception, females; a circumstance which makes it doubly riskful to describe as a new species, that which may prove the female of some one previously described. The colour is wholly testaceous, the legs being clothed with long hair of the same colour.

The plate drawn and engraved by Mr. Ingall, is most liberally presented by that gentleman to the Entomological Magazine. It was intended for colouring, and the impressions were taken off for that purpose; circumstances preventing this have, however, supervened: any explanation of these would be as painful to ourselves as uninteresting to our readers.

ART. XXXVI.—*A Sonnetoid on Llanthony.*

TO THE EDITOR OF THE ENTOMOLOGICAL MAGAZINE.

SIR,—It is difficult to say what the enclosed has to do with Entomology, except as the common subject of a vignette in one of your late numbers. But it is so rarely that any of our *Nugae* can be hooked on to your exceedingly dry and scientific details, that, perhaps, the attempt may be received with indulgence. Observe, it is not a sonnet, but a *species* as yet *undescribed*, being two lines longer than all the rest of the family.

A. S. K.

Crickhowell, 21st. Nov. 1836.

Llanthony.

There may be mightier ruins;—Conway's flood
 Mirrors a mass more noble far than thine;
 And Aberystwith's gaunt remains have stood
 The ceaseless shock where winds and waves combine;
 Lone is Dalbadarn, and the lovely shrine
 Of Valle Crucis is a spell of power
 By which each meaner thought and sense are chained;
 Proud of that long array of arch and tower,
 Raglan may claim a rude pre-eminence;
 Tintern is peerless at the moonlit hour

Neath, Chepstow, Goodriche, each has its pretence; —
 But mid thy solitary mountains, gained
 By no plain beaten track, my spirit turns
 To thee, Ilanthy; and, as yet untrained,
 Would freely worship where thine altar burns,
 All, save by nature's priests, unseen and unprofaned!

ART. XXXVII.—*Notes on Tenthredinina.*

By EDWARD NEWMAN.

IN looking through Mr. Stephens's descriptive list of the *Tenthredinidæ*, with a view to naming the specimens in the possession of the Entomological Club, I have made several marginal memoranda, some of which I thought might perhaps be of service to the public. Others, relating to the general arrangement and the characters of genera, I shall not at present publish, contenting myself with saying, that I consider many of the genera, as *Allantus*, *Selandria*, &c. as not sufficiently definite or precise. In the group of genera with clavated antennæ, I have no remark to make on the species, not having a sufficient series before me to decide. With respect to these, I acknowledge it has occurred to me that sexes are occasionally elevated to the rank of species; but this is no more than a surmise.

In the genus *Hylotona*, I am unacquainted with *H. pilicornis* and *H. Berberidis*, the latter of which was reported as British by the late lamented Dr. Leach. Of *H. enodis* I possess a fine series, and among them, specimens precisely agreeing with Mr. Stephens's description of *H. Anglica*. Again, in the descriptions of *H. Violacea* and *H. cærulea*, differing only in the tibiæ of the latter being occasionally obscurely banded with white, I cannot perceive a specific difference. In like manner, *H. Leachii* appears to me to be scarcely a striking variety of *H. ustulata*. *H. Klugii*, and *H. segmentaria*, again vary but very slightly; and *H. Stephensii* and *H. Pagana* are to be distinguished principally by the colouring of their legs; a character in which scarcely two specimens precisely agree.

Schizoceros fuscatus I have taken at Birch-wood, and *S. pallipes*, at Shobden, in Herefordshire. I have also received the latter from Brighton. Allied to *Cladius* and *Pristophora*, I possess several insects which appear unnoticed by Mr. Stephens.

PRISTOPHORA, A. Stephens?

Sp. 1. *Pris. cineta*. *Niger, corpore rubro-cincto, pedibus pallidis, nigro diversis.*

Antennæ and head, with the exception of a yellow labrum, black; body black, with a bright red belt, which passes completely round, occupying four abdominal segments: legs pale; profemora dusky at the base; mesofemora at the base and apex, black; meta-femora at the apex, metatibiae at the apex, and metatarsi, wholly black.

I have seen but a single specimen of this insect, taken by myself in Herefordshire, in May. This will perhaps be the best time to say, that the foregoing and other insects described as new in this article, have been carefully compared with the specimens in Mr. Stephens's collection; a comparison in which that gentleman's assistance has been most kindly given.

GENUS—EUURA. *Newman*. Mas. et fem.

Antennæ 9-articulatæ vix pilosæ, breves, tenues; proalæ cellula marginali 1, submarginalibus 3, quarum 1^{ma} parva quadrata, 2^{da} longa nervos 2 recurrentes recipiens; ano *feminae* oviductu prorrecto, 2que setis validis divaricatis armato.

This genus, in the disposition of the wing nervures, corresponds very nearly with *Pristophora* B. of Stephens, but in other respects it widely differs; the antennæ are short, slender, and very slightly pilose in both sexes. In the male there is a slight disposition to elongation in the joints, the sheath of the oviduct of the female is very pilose, elongate, and conspicuous: two strong bristle-like pilose appendages (existing in a less degree in cognate genera) arise, one on each side of the *paratelum*; these three points present a somewhat trident-like appearance at the tail, which at once distinguishes the insect.

Sp. 1. *Eura gallæ*. *Nigra: antennis nigris, apice ferrugineis: pedibus pallidis.*

Black: mouth yellow; antennæ rust-coloured at the tip; the legs entirely pale.

The insect is the size of *Nematus pallipes*: the only specimen I have observed was taken by Mr. Walker, in Scotland.

Sp. 2. *Eura cynips*. *Nigra: antennis male ferrugineis: fem. nigris: pedibus pallidis, tarsis fuscis.*

Black: mouth ferruginous: antennæ of the male dull ferruginous, with the exception of the basal joint, which is jetty black; of the female, very obscurely ferruginous towards the apex: legs pale yellow, with the tarsi fuscous.

This insect is abundant, and appears universally distributed: it is less than half the size of the preceding; may be beaten off willows, in the leaves of which the larva forms excrescences, in the neighbourhood of London throughout the summer. On referring to Mr. Stephens's species *Nematus gallicola*, I find the description would suit my insect very tolerably; but yet that insect, (I speak of Mr. Stephens's specimens,) has no other characters than size and distribution of colour in common with *Eura*.

GENUS.—NEMATUS. *Leach.*

Sp. 1. *Nematus tibialis*. *Flavus: oculis, antennis, dorsoque nigris: pedibus flavis: metatibis metatarsisque nigerrimis.*

Yellow: eyes, upper side of the antennæ, crown of the head, and a large black occupying the dorsal portion of every segment, black; the mesoscutellum alone yellow: the legs are yellow, with the exception of the hind tibiæ and tarsi, which are jet black: the nervures of the wings are intensely black.

This insect is from the Isle of Wight, where it was taken by Mr. Walker. The black hind tibiæ are very conspicuous, and distinguish from the other species I possess: its size corresponds with that of *Nematus luteus*, Fab. In the species nearly allied to the one before me, I fear Messrs. Stephens and Le Pelletier St. Fargeau have carried division much too far; but I must not attempt the task of reducing this fearful group.

GENUS.—*CRÆSUS*, *Leach*.

I have received specimens of a *Cræsus* from Ireland, with the body entirely black, with the MS. name *Cræsus Stephensii*. Mr. Stephens mentions this as a variety, saying it is probably referrible to a distinct species. I could wish that so fine an insect, with Mr. Stephens's name attached to it, may prove distinct.

GENUS.—*FENUSA*, *Leach*.

The two insects which I am about to describe as belonging to the genus *Fenusa*, differ extremely in general appearance from the insects ordinarily described as constituting the genus; nevertheless, in the neururation of the upper wings, and in the number and relative proportion of the joints of the antennæ, there exists no observable difference; and as the genera of the family seem founded on these characters, I shall not venture to propose new ones.

Sp. 1. *Fen. Ianthæ. Nigra lateribus flaveolis: proalæ fumosæ costâ flavcola: pedes pallidi, femoribus omnibus plaga magna nigra.*

This insect has a very large head, considerably wider than any part of the body: the mouth, and a wide band round the eyes, are yellow: the face, antennæ, and crown of the head, black: the body is black above and beneath, but the sides are pale yellow: this colour forms a broad lateral line from end to end, in which line the wings are situated: the forewings have the costal portion tinted with the most delicate straw-colour, the remaining part clouded; the two marginal cells are of nearly equal size; the first submarginal cell is elongate, the second of moderate size: the hind wings are transparent and uncoloured; legs delicately straw-coloured, with a black patch on the femora: size rather less than that of *Cladius difformis*.

This insect appears generally distributed; it occurs in the woods of the metropolitan district in May and June.

Sp. 2. *Fen. parviceps. Nigra, pedibus albidis, femoribus nigris; alis amplissimis nigro nebulatis; caput (pro genere) minimum.*

This insect has a very small head: the face, region of the insertion of the antennæ extending upwards in two lobes, and margin of

the eyes, are of a dirty white: the antennæ are brown: the eyes and crown of the head are black: the body is entirely black and shining, with the exception of a row of white spots on each side of the abdominal segments: the fore wings are elongate and ample; they have the costal margin as far as the stigma, the inferior margin to the same extent, and a direct fascia uniting these two, blackish: the marginal as well as submarginal cells are of nearly equal proportions: the hind wings have a slight black cloud: legs white, with a black patch on the femora: size that of *Cladius difformis*.

Not common; taken twice by Mr. Walker.

The Club Cabinet appears to possess many other *Fenusæ* undescribed; but none are so distinct as the foregoing.

GENUS.—SELANDRIA, *Leach*.

Sp. 1. *Selan. pallida*. *Pallide viridis, oculis ocellisque nigris*.

This insect is entirely of a pale, sickly, green colour, with black eyes and ocelli: its size is that of *Selandria ferruginea*.

Occurs commonly on the mountain ash.

Sp. 2. *Selan. versicolor*. *Niger; abdominis dorso flavo, lateribus & centrique albidis nigro-sparsis, pedes pallidi*.

Head very broad, black: pro- meso- and metathorax black; the latter with two white spots above: propodeon black above, with a white posterior margin, and a central oblong white spot: the seven following segments dorsally bright yellow, laterally and ventrally white, sprinkled with black spots, disposed in some specimens in somewhat regular lines: telum dusky: wings hyaline, but completely covered with minute brown dots, nervures brown: coxæ white: trochanters white, with a black spot: the legs pale yellow: about the size of *Cladius difformis*.

Neighbourhood of London; May and June.

Sp. 3. *Selan. chrysorrhæa*. *Niger, alis nigro-tinctis ano pedibusque croceis*.

Tenthredo chrysorrhæa. *Klug*.

Very small, being less than *Nematus gallicola* of Stephens.

London, Birch Wood; Worcester, Leominster, &c.

GENUS.—ALLANTUS, *Leach*.

Sp. 1. *Allan. hæmatopus*. Mas. *Niger, cingulo abdominis rufo: pro- et mesopedibus stramineis metafemoribus sanguineis plaga nigra metatarsis atris.*

Tenthrido hæmatopus,—*Panzer*.

Head and antennæ black, with the clypeus, labrum, and palpi delicately straw-coloured: body black, excepting the 7th, 8th, and 9th segments, which are bright red: the fore and middle legs are delicately straw-coloured: the hind legs particolours: the coxæ are exteriorly straw-coloured, but towards the body jet black: the trochanters are wholly straw-coloured; the femora bright red, with a jet black patch above the tarsi wholly black; all the claw and pulvilli are blue. This insect is about the size of *Allanti neglectus* and *blandus*.

This splendid insect is not uncommon. I have observed it in the collection of the British Museum and elsewhere, and it has been presented to the Entomological Club from the neighbourhood of Worcester, by Mr. Burlingham, and from the neighbourhood of Ramsgate, by Mr. Foster. I have little doubt that it is the male of *Ten. hæmatopus* of Panzer: if it prove otherwise, I would propose calling it *Allantus Ione*. Many other observations might be made on the genus *Allantus*, both as regards the value of the genus, and of the species it contains; but a general work is in progress, in which, I trust, the genus will be remodelled.

ART. XXXVIII.—*Some Account of the Birds of Godalming*
By WARING KIDD and OTHERS.

THE observations contained in this article have been principally made by Mr. Waring Kidd, whose long residence at Godalming, coupled with the nature of his favourite and almost only employment, the preservation of birds, have given opportunities of acquiring local knowledge in Ornithology superior to those which almost any other individual is ever likely to possess. The second person whose authority is adduced is Mr. William Stafford, for many years the assiduous assistant of Mr. Kidd in the exercise of his profession. The third

person is the author of various papers in *Loudon's Magazine of Natural History*, and other journals, under the signature of "Rusticus;" and the fourth, a long resident at Godalming, and a frequent participator in the discoveries of the other three. This fourth (although the least capable) individual is the compiler of this paper. One bird is introduced on the authority of White, of Selbourne.

Godalming is situate thirty-four miles S.S.W. of London, in the county of Surrey; the town stands in a low situation on the river Wey, and is completely surrounded by little hills, the various ascents of which present pleasing prospects in every direction. The soil is a bright red sand, which extends from the chalky range of cold, poverty-stricken Downs, crossing the country from Reigate to Farnham; between the chalk and the sand is an exceedingly narrow tract of blue clay, sometimes scarcely ten yards in width. These three distinct soils do not gradually intermingle, but are separated by the most abrupt transition, and their effect on the produce where the three soils occur in the same field is very marked. The sandy soil produces a variety of surface; in most parts it is excessively poor, and wholly unprofitable to man: when this is the case, if situated on the low grounds, it becomes an almost continuous marsh, occasionally presenting immense sheets of water; these ponds, in the process of time, enrich the soil which they cover, and make it worth the expense of draining;—thus the once fine piece of water, known as Old Pond, has been embanked, divided, drained, and filled at different times and in various ways, until nearly an hundred acres are redeemed and devoted to agriculture; still it is a pool of respectable dimensions, and is a site around which some of my memory's most unfaded flowers have been wreathed. In many places this labour would be ill bestowed, and we find fine pools of water that have existed for centuries all along that valley which winds by Peperharrow, Elsted, Frensham, Thursley, the Pudmores, Headley, &c. Ascending thence by Bramshot to Liphook, we find a track of similar surface as regards vegetation, producing heath, furze, and wortleberry, but now light and dry, and easily scattered by the wind; this is a peculiar character of Hindhead. Wherever the sand bears the red tint of iron, the chief natural produce is furze; but this colour, as we proceed westward, yields to a blue tint. The two colours stain the wool of the sheep, which

range the wastes, and the red and blue are very conspicuous in their fleeces, the blue being much preferred. The chief natural produce of the blue sand is heath of the three usual species, which are very apt to be completely matted together with *Cuscuta*. The marshes or moors, as they are here called, produce immense quantities of the beautiful little *Drosera*. In the low lands we find an almost infinity of water-fowl; on the hills grouse; and, if abundant in furze, the Dartford warblers; and both situations are assiduously hunted by hawks and owls, frequently of the rarer species. This desert district is a favourite resort of the Fern Owl; it is exceeding abundant, so much so, that its cry is quite wearisome of an evening. The bird is plentiful on every heathy district in the neighbourhood. On Highdown heath Mr. Stafford shot forty-seven in a very short space of time.

The hills in the immediate neighbourhood of Godalming are completely covered with coppices, abounding with trees in all stages of growth, forming as excellent a resort for the Passerine birds as the ponds and moors do for the swimmers and waders. In the underwood of these hills the shy hawfinch breeds annually, and remains throughout the year; but the parent birds are difficult to obtain, flying the instant they catch sight of a gunner, although many hundred yards distant.

The fir-trees on the higher grounds are frequently the resort of whole troops of crossbills. The higher trees in the coppices are often selected as building-places by the carrion crow and magpie; the latter, however, is not a very common bird in the district. Noblemen's and gentlemen's seats are abundantly scattered throughout the district, and there is scarcely one without its rookery, so that these birds abound. The hooded crow is also extremely plentiful; and it is next to impossible to cross the common between Godalming and Guildford without driving several of them from the turnpike road, on which they remain in the most fearless manner, until the horses of a coach are within twenty yards of them: on being disturbed they take a short circuit, and settle on the identical spot from which they had risen. The sand-banks existing throughout the district are completely honey-combed by the sand martin, but in many places the original excavators

have been dispossessed by the common sparrow; this is particularly the case at the Holloway Hill sand-bank, immediately adjoining the town.

In the List which follows, Mr. H. Doubleday's excellent "Nomenclature" has been scrupulously followed.^a

Catalogue of Birds which have occurred in the Neighbourhood of Godalming.

Pandion Haliaeetus,	Osprey	Calamophila biarmicus,	Bearded Titmouse
Accipiter fringillarius,	Sparrow-hawk	Bombicilla garrula,	Waxen Chatterer
Falco Peregrinus,	Peregrine Falcon	Alauda arvensis,	Sky Lark
subluteo,	Hobby	arbores,	Wood Lark
assalon,	Merlin	Plectrophanes nivalis,	Snow Bunting
tinnunculus,	Kestrel	Emberiza miliaria,	Common Bunting
Buteo vulgaris,	Common Buzzard	schæniculus,	Reed Bunting
Pernis apivorus,	Honey Buzzard	citrinella,	Yellow Hammer
Circus rufus,	Moor Buzzard	cirius,	Chil Bunting
cyaneus,	Hen Harrier	Fringilla coelebs,	Chaffinch
cinereus,	Ash-coloured Harrier	montifringilla,	Brambling
Scops Aldrovandi,	Scops-eared Owl	Passer domesticus,	House Sparrow
Otus vulgaris,	Long-eared Owl	Coccothraustes vulgaris,	Hawfinch
Brachyotus,	Short-eared Owl	Chloris,	Greenfinch
Strix flammea,	White Owl	Carduelis spinus,	Siskin
Syrnium Aluco,	Tawney Owl	elegans,	Goldfinch
Lanius collurio,	Red-backed Shrike	Lanaria cannabina,	Linnet
excubitor,	Ash-coloured Shrike	montium,	Twite
Muscicapa grisola,	Spotted Flycatcher	borealis,	Mealy Redpole
luctuosa,	Pied Flycatcher	minor,	Lesser Redpole
Turdus viscivorus,	Mistle Thrush	Pyrrhula vulgaris,	Bullfinch
pilaris,	Fieldfare	Loxia curvirostra,	Cross-bill
muscius,	Song Thrush	Sturnus vulgaris,	Starling
ilicinus,	Redwing	Corvus corax,	Raven
merula,	Blackbird	corone,	Crow
torquatus,	Ring Ousel	frugilegus,	Rook
Oriolus Galbula,	Golden Oriole	cornix,	Hooded Crow
Accentor modularis,	Hedge Sparrow	monedula,	Jackdaw
Erithaca rubecula,	Redbreast	Pica melanoleuca,	Magpie
Phœniceura ruticilla,	Redstart	Garrulus glandarius,	Jay
Salicaria locustella,	Grasshopper Warbler	Nucifraga caryocatactes,	Nutcracker
phragmitis,	Sedge Warbler	Picus viridis,	Green Woodpecker
arundinacea,	Reed Warbler	major,	Gr. Spotted Woodpecker
Philomela huscina,	Nightingale	minor,	Gr. Spotted Woodpecker
Currucaa atricapilla,	Blackcap	Yunx Torquilla,	Wryneck
hortensis,	Greater Pettechaps	Certhia familiaris,	Creeper
cinerea,	White throat	Troglodytes Europæus,	Wren
garrula,	Lesser White throat	Upupa Epops,	Hoopoe
Sylvia sibilatrix,	Wood Wren	Sitta Europæa,	Nuthatch
trochilus,	Willow Wren	Cuculus canorus,	Cuckoo
rufa,	Chiffchaff	Merops Apiaster,	Bee-eater
Melizophilus provin-		Alcedo ispida,	Kingfisher
cialis,	Dartford Warbler	Hirundo rustica,	Swallow
Regulus auricapillus,	Gold-crested Wren	urbea,	House Martin
Motacilla alba,	Pied Wagtail	riparia,	Sand Martin
boarula,	Grey Wagtail	Cypselus apus,	Swift
flavola,	Yellow Wagtail	Caprimulgus Europæus,	Goat-sucker
Anthus pratensis,	Meadow Pipit	Columba palumbus,	Ring Dove
arbores,	Tree Pipit	arnas,	Stock Dove
Saxicola oenanthe,	Whitethroat	livia,	Rock Dove
rubetra,	Whinehat	turtur,	Turtle Dove
rubicilla,	Stonechat	Phasianus Colchicus,	Pheasant
Parus major,	Great Titmouse	Torquatus,	Ring Pheasant
caeruleus,	Blue Titmouse	Tetrao Tetrix,	Black Grouse
palustris,	Marsh Titmouse	Perdix cinerea,	Partridge
ater,	Cole Titmouse	Coturnix vulgaris,	Common Quail
Mecistura caudata,	Long-tailed Titmouse	Edenemus crepitans,	Common Thick-knee

^a A Nomenclature of British Birds, by Henry Doubleday. London, Westley and Davis, 1836.

<i>Charadrius plumialis</i> ,	Golden Plover	<i>Fulica Atra</i> ,	Common Coot
<i>hiaticula</i> ,	Ringed Plover	<i>Anser ferus</i> ,	Grey Lag Goose
<i>Squatarola cinerea</i> ,	Grey Plover	<i>albifrons</i> ,	White-fronted Goose
<i>Vanellus cristatus</i> ,	Lapwing	<i>Anas Boschas</i> ,	Wild Duck
<i>Calidris arenaria</i> ,	Sanderling	<i>Nettion Acuta</i> ,	Pintail
<i>Haematopus ostralegus</i> ,	Pied Oyster-catcher	<i>Querquedula crecca</i> ,	Teal
<i>Ardea cinerea</i> ,	Heron	<i>Marca Penelope</i> ,	Widgeon
<i>Botaurus stellaris</i> ,	Bittern	<i>Fuligula ferina</i> ,	Common Pochard
<i>Thal. falcinellus</i> ,	Glossy Ibis	<i>cristata</i> ,	Tufted Duck
<i>Numenius arquata</i> ,	Common Curlew	<i>Clangula chrysophthal-</i>	
<i>Totanus ochropus</i> ,	Green Sandpiper	<i>mos</i> ,	Golden Eye
<i>hypoleucos</i> ,	Common Sandpiper	<i>Podiceps cornutus</i> ,	Horned Grebe
<i>glottis</i>	Greenshanks	<i>minor</i> ,	Little Grebe
<i>Himantopus melanop-</i>	Black-winged Long	<i>Colymbus glacialis</i> ,	Great Northern Diver
<i>terus</i> ,	shanks	<i>arcticus</i> ,	Black-throated Diver
<i>Scelopox rusticola</i> ,	Woodcock	<i>Sterna Hirundo</i> ,	Common Tern
<i>gallinago</i> ,	Snipe	<i>minuta</i> ,	Little Tern
<i>gallinula</i> ,	Jack Snipe	<i>nigra</i> ,	Black Tern
<i>Macetes pugnax</i> ,	Ruff	<i>Larus canus</i> ,	Common Gull
<i>Phalaropus lobatus</i> ,	Grey Phalarope	<i>atricilla</i> ,	Black-headed Gull
<i>Rallus aquaticus</i> ,	Water Rail	<i>Thalassidroma pelagica</i> ,	Storm Petrel
<i>Crex pratensis</i> ,	Corn Crake	<i>Leachii</i> ,	Fork-tailed Petrel
<i>Gallinula Chlo-</i>			
<i>ropus</i> ,	Common Moorhen		

Remarks on the foregoing List.

Pandion Haliæetus.—This bird has appeared at various times in the neighbourhood of the Pudmoors, Frensham Pond, and similar situations. No less than seven have been presented by *W. K.* An Osprey was shot at Frensham Pond, in 1772, while it was sitting on the handle of a plough devouring a fish. *White.*

Falco Peregrinus.—Very uncommon; one has been shot in Hindhead, *W. K.*; a second was taken in a rabbit trap at Eshing, *E. N. D.*

Fulco subbuteo and *F. axalon*.—The Hobby is by no means uncommon throughout the Godalming district, but the Merlin is much more rare; specimens of the latter, shot by gamekeepers, have been occasionally brought to *W. K.* The Kestrel and Sparrow Hawk abound.

Buteo Vulgaris.—The common Buzzard is very abundant, *W. K.*

Pernis apivorus.—Two specimens of the Honey Buzzard have been shot at Shillinglee Park, the seat of Lord Winterton. *W. K.* A pair of Honey Buzzards built a nest in a tall, slender beech tree at Selbourne, in 1786. *White.*

Circus rufus.—Three specimens, shot in the neighbourhood of Godalming, have been preserved by *W. K.*

Circus cyaneus and *Cinereus*.—These birds, although never abundant, are continually to be seen; the remarkable

colour of the Hen Harrier readily distinguishes it. On the Hogsback and about Loseley it may frequently be observed traversing the fields with an owl-like flight, probably in quest of similar objects. *E. N. D.* Several of both species have been preserved by *W. K.*

Scops Aldrovandi.—A single specimen of this singular little owl was shot at Shillinglee Park. *W. K.*

Otus vulgaris and *O. brachyotus.*—The long-eared Owl is abundant; the short-eared less common, but has not unfrequently been preserved by *W. K.*

Lanius Excubitor.—A great ash-coloured Butcher-Bird was shot in the winter of 1772-3 in Tisted Park. *White.* Seen occasionally in the higher grounds in the neighbourhood; and a single specimen has been preserved by *W. K.*

Muscicapa luctuosa.—A single specimen was shot in Mr. Kidd's orchard, at Godalming, about fifteen years ago, *W. K.*; and a second at Witley Park, in the middle of May, 1836. *W. S.*

Turdus torquatus.—The Ring Ouzel is frequently found on Hindhead, and other high sandy grounds in the neighbourhood of Godalming. *W. K.*

Oriolus galbula.—A single specimen of the Golden Oriole was seen near the town of Godalming in the year 1833. *W. K.*

Philomela luscinia.—The neighbourhood of Godalming has been called the Valley of Nightingales, and well it deserves the name: throughout the fine nights in May there is a complete chorus of these birds; every coppice contains numbers, and every garden two or three pair: it is really glorious to listen to them in a moonlight midnight after a showery day. *Rusticus.^a*

Melizophagus provincialis.—I have seen the furze quite alive with these birds. They are, however, very hard to shoot; darting down directly they see the flash or hear the crack, I do not know which. I have seen excellent shots miss them while rabbit shooting with beagles. They prefer those places where the furze is thick, high, and difficult to get in. *Rusticus.^b* The Dartford Warblers continue in the same situation throughout the winter. *E. N. D.*

Calamophilus biarmicus.—The Bearded Tit has appeared in various places in the neighbourhood of Godalming, but in no

^a Magazine of Natural History, Vol. VI. p. 114.

^b Id. Vol. VI. p. 112.

instance plentifully. Two or three specimens have been seen at Catshall, and a pair at Ockford Pond. *E. N. D.* A few have been shot at Elsted, and also at Hampton Lodge, the seat of H. B. Long, Esq. *W. K.*

Bombucilla garrula.—A single specimen of the Waxen Chatterer was seen near Godalming in the year 1832. *E. N. D.*

Plectrophanes nivalis.—On the Moors near Selbourne. *White.*

Emberiza citris.—The Girl Bunting has occasionally been shot in the neighbourhood of Godalming. *W. S.* This bird is very abundant at Alton, in Hampshire, and also in the Isle of Wight, where it breeds. *W. K.*

Coccothraustes vulgaris.—This bird has been continually observed in the thick coppices at Westbrook, and in Eshing-park; it seems to feed on berries and seeds fallen to the ground, and flies up into the highest trees at the least alarm. It certainly breeds in the neighbourhood of Godalming. *W. S.* This appears to be one of the most common of British birds, although from its wildness it is seldom observed. *E. N. D.*

Carduelis spinus.—The Siskin may be frequently found in great abundance in the alders on the covers near Catshall, close to the river. *W. K.* The siskin is a regular winter visitor with us, keeping company with the little redpoles, which abound wherever there are alders along the banks of the Wey; they are almost entirely females; at least, in the proportion of fifty or sixty to one. *Rusticus.^c*

Linaria Montium.—The Twite, a bird perfectly distinct from the linnet, is now and then shot on Munsted Heath. *Rusticus.^d*

Loxia curvirostra.—The Crossbill is by no means uncommon here in the winter. I have seen them of every hue, from bright yellow-green to bright red, and of all intermediate shades between each of these and dull brown. Strange as it may appear, the bright red ones appear to be the young birds; the yellow green ones old hens, and the brown ones old cocks: at least, this has been the case in those which I have had an opportunity of examining. The cry of the crossbill is very peculiar; it is sharper than that of the greenfinch, and not so much of a *chuck* as that of a linnet: generally while sitting they are silent and very quiet birds, a number of them sitting in a Scotch

^c Mag. of Nat. Hist. Vol. VI. p. 113.

^d Id. Ib.

pine, and remaining in it even a whole day ; at any rate, if not disturbed, until every cone has been pried into and its contents taken out. *Rusticus*.^e

Corvus monedula.—The Jackdaw builds in great numbers in the Chalk-pits, particularly one on Katherine-hill. *E. N. D.*

Nucifraga caryocatactes.—One specimen of this exceedingly rare bird was seen, and closely observed by Samuel Haines, Esq. surgeon, of Godalming, in Peperharrow-park, the seat of Viscount Middleton. From the description given by Mr. Haines, who is a good Ornithologist, there is not the slightest doubt as to the identity of the bird. *W. K.*

Picus minor.—The lesser spotted Woodpecker is far from uncommon in this neighbourhood. I have seen it at Eshing, Peperharrow, Crooksbury-hill, &c. *E. N. D.* Common at Godalming. *W. K.* The green Woodpecker and the greater spotted Woodpecker are still more common.

Certhia familiaris.—It is a singular and unpublished fact relative to the Creeper, that in the summer, when multitudes of gnats are to be found reposing throughout the day on the trunks of trees, this little bird will take a gnat in its bill without swallowing it, then hunt for another and take it in like manner, and not swallow at all until its little slender bill is quite distended with the number of gnats contained. *H. Newman.*

Upupa Epops.—The Hoopoe has on several occasions been shot near Godalming. *W. K.*

Merops Apiaster.—A single specimen of this beautiful bird was shot in a garden in the town some years back, and is now in the possession of Robert Moline, Esq. *W. K.*

Caprimulgus Europæus.—One particular district called the Pudmoors, is the favourite resort of the Fern Owl. In the day time, while walking across the moor, you will every now and then put up one of these singular birds ; their flight is perfectly without noise, and seldom far at a time ; but of an evening it is far different : about twenty minutes after sun-set the whole moor is ringing with their cry, and you see them wheeling round you in all directions. They look like spectres, and often, coming close over you, assume an unnatural appearance of size against a clear evening sky. I believe its very

peculiar note is uttered sitting, and never on the wing. I have seen it on a stack of turf with its throat nearly touching the turf, and its tail elevated, and have heard it in this situation utter its call, which resembles the birr of a mole-cricket,—an insect very abundant in this neighbourhood. I have almost been induced to think that this bird serves as a decoy to the mole-cricket, this being occasionally found in the craw of these birds when shot. Those who are not acquainted with the cry of the bird or the insect may imagine an auger boring oak, or any hard wood, continued and not broken off, as is the noise of the auger, from the constant changing of hands. The eggs of the fern owl have frequently been brought me by boys; there are only two in number, greyish-white, clouded and blotched with deeper shades of the same colour; the hen lays them on the soil, which is either peat or a fine soft blue sand, in which she merely makes a slight concavity, but no nest whatever. The cry of the fern owl is the signal for the night-flying moths to appear on the wing, or rather the signal for the Entomologist's expecting them. *Rusticus*.^f

Columba Livia.—The Rock Dove is sometimes met with near Godalming. *W. K.*

Tetrao Tetrix.—From time immemorial the Black Cock has been an inhabitant of Hindhead. It seems strange that White should lament its loss, for he might generally have found it within an hour's ride of Selbourne. They are certainly not abundant, being apparently entirely unpreserved; but no season passes without some few brace being killed by the sportsmen of Godalming. The black cock is a noble bird on the wing; in addition to his colour, his forked tail distinguishes him from all other game. *E. N. D.* When I was a little boy I recollect a black cock used to come now and then to my father's table. *White.* The black cock frequents Hindhead. *W. K.* §

Coturnix vulgaris.—The Quail is not common, but is occasionally found in the neighbourhood of Godalming. *W. K.*

Edicnemus crepitans.—This bird abounds in the champaign parts of Hampshire, and breeds, I think all the summer, having young ones, I know, very late in the autumn. They frequent dry, open, upland fields and sheepwalks. *White.* Guildford Downs. *W. K.*

^f Mag. of Nat. Hist. Vol. V. p. 603.

Charadrius pluvialis.—The Golden Plover is common near Farnham. *W. K.*

Charadrius hiaticula.—A few of the Ring Plover have been shot at Frensham Pond. *W. K.*

Squatarola cinerea.—A few of the Grey Plover have been shot at Godalming. *W. K.*

Vanellus cristatus.—The Lapwing is a most abundant bird throughout the moor district, occasionally congregated in flocks of many thousands. *E. N. D.*

Calidris arenaria.—The Sanderling has been shot not unfrequently at Frensham Pond. *W. K.*

Hamatopus ostralegus.—Four specimens of the Oyster-catcher have been shot in the vicinity of Godalming. *W. K.*

Ardea cinerea.—The Heron is very abundant round Godalming, particularly in the moor district. *E. N. D.*

Botaurus stellaris.—The Bittern is scarce here; but in one spot, a little reedy swamp, near Eshing Bridge, two or three are shot every winter. It is hard to put up, running excessively fast, and even standing to bay your spaniel when overtaken; you are therefore sure of him when once on his trail, provided you are not prevented by the reeds from seeing him when he rises. The bittern is a light loose-feathered bird. A charge which a mallard would fly away with, and which a guillemot would laugh at, will rag a bittern to pieces. One reason of this may be, that he hates flying by day, and will not get up till you are close on him, and then flusters about this way and that, and seems to be uncertain what to do. I once saw one get up, a hundred and fifty yards from me; but not seeing me he came right over where I stood. I pulled but missed him, after which he kept on soaring upwards till he was completely lost in the clouds. I never heard the bittern boom on rising, he usually gives a sharp harsh cry like that of a grey goose on the wing. *Rusticus. g*

Ibis falcinellus.—A single specimen of the Glossy Ibis was shot at Witmore Pond, near Guildford, in March, 1833. *W. S.*

Numenius arquatus.—The Curlew has been shot on the moors, near Frensham. *W. K.*

Totanus ochropus.—The Green Sandpiper is frequently met with near Godalming. *W. K.*

Totanus glottis.—A single specimen of the Greenshanks has been shot at Hampton Lodge. *W. K.*

Himantopus melanopterus.—In the last week of April, 1779, five of these birds were shot upon the verge of Frensham Pond, a large lake belonging to the Bishop of Winchester, and lying between Wolmer Forest and the town of Farnham, in the county of Surrey. The pond-keeper says there were three brace in the flock, but that after he had satisfied his curiosity he suffered the sixth to remain unmolested. One of these specimens I procured, and found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the shanks had been fastened on, to impose on the credulity of the beholder: they were legs *in caricatura*; and had we seen such proportions on a Chinese or Japan screen, we should have made large allowances for the fancy of the draughtsman. My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the naked part of the thigh measured three inches and a half, and the legs four inches and a half. Hence we may safely assert that these birds exhibit, weight for inches, incomparably the greatest length of legs of any known birds. *White.*

Machetes pugnar.—A considerable flight of these birds, apparently all of them young ones, were found near Godalming, on the 20th August, 1836. *W. K.*

Phalaropus lobatus.—The Grey Phalarope is found occasionally round Godalming and Guildford. *W. K.*

Anser albifrons.—This bird has been repeatedly shot at Frensham Pond. *W. K.*

Anser ferus.—The Grey Lag Goose had sometimes occurred at Godalming, on Old Pond, Frensham, and other large ponds. *W. K.*

Dasila acuta.—A flight of Pintail Ducks has several times been observed on Old Pond. Two were shot there in Jan. 1836, by Mr. H. Moline. *E. N. D.*

Querquedula crecca.—The Teal has repeatedly occurred on the river Wey, in considerable numbers. *E. N. D.*

Mareca Penelope.—The Widgeon has occurred at Godalming. *W. K.*

Fuliga ferina.—The Pochard occurs frequently in large flocks on Frensham and various other ponds. I have seen fifty or more on Old Pond at a time, sometimes intermingled

with the common wild duck, from which, however, they always separate on rising. *E. N. D.*

Podiceps cornutus.—A pair of the Horned Grebe were shot at Elsted, and preserved for R. Moline, Esq. by *W. K.*

Colymbus glacialis.—A very fine specimen of the Great Imber Goose or Diver, was shot a few years back at Old Pond: its power of diving, and the length of time it stayed under water, were wonderful; for this purpose I find it is furnished with an immense bladder, extending the whole length of its neck, which it can inflate at pleasure; and this being connected with the windpipe is of course available as a reservoir of air. *Rusticus*.^h Two of the Great Northern Divers have been shot at Frensham Pond. *W. K.* As one of my neighbours was traversing Wolmer Forest, from Bramshot, across the moors, he found a large uncommon bird fluttering in the heath, but not wounded, which he brought home alive. On examination it proved to be the *Colymbus glacialis* of Linnaeus. *White.*

Colymbus arcticus.—The Black-throated Diver has been occasionally shot at Frensham Pond. *W. K.*

Sterna Hirundo.—This bird has been shot not unfrequently at Frensham Pond. *W. K.*

Sterna minuta.—The Little Tern occurs at Frensham Pond, where it has occasionally been killed. *W. K.*

Sterna nigra.—The Black Tern is shot at Frensham Pond. *W. K.*

Thalassidroma pelagica.—The Stormy Petrel, or Mother Cary's Chicken, has been shot near Godalming. *W. K.*

Thalassidroma Leachii.—A single specimen of the Fork-tailed Petrel was shot on Hindhead, near Liphook, and stuffed by *W. S.*

It will be seen that a great number of the aquatic and wading birds can only be considered accidental visitors, probably driven inland by stress of weather. Godalming cannot be considered the habitat of such. Nevertheless, as birds having no claim whatever to a place in our British fauna, have been admitted into all our works, on the strength of their having, on unquestionable authority, been occasionally killed or seen, although never suspected of being residents, so have

^h Mag. of Nat. Hist. Vol. VI. p. 114.

these rare visitants a like claim to be admitted into the restricted lists of a particular district. The memoranda which follow the list in this instance, will show that there is no desire on the part of the compiler to lay claim to them as natives. On the large ponds in the neighbourhood, a number of Gulls have, at various times, been killed; most have been in an immature state of plumage, and therefore not easily distinguished; a circumstance excusable when it is recollected the only authority possessed by Ornithologists was Bewick's, whose descriptions, nomenclature, and figures of the Gulls, are very far from satisfactory. The total number of birds suffers a diminution on this account, as those species not ascertained have been wholly omitted. *E. N. D.*

ART. XXXIX.—*Proceedings of the Entomological Club.*

SITTING OF THE 20th OCTOBER, 1836.

Present,—Messrs. Bevington, Bennett, Bowerbank, J. F. Christy, Davis, Hanson, Stanger, Shaw, Trusted, and Newnan.

Mr. BEVINGTON in the Chair.

The Minutes of the last sitting were read and confirmed.

The CURATOR reported, that in compliance with the directions of the Club, embodied in a Minute of the last sitting, he had insured the property of the Club, in his possession, to the amount of £750.

The CURATOR read the following list of donations :—

Mr. J. LOUNDS, of Quebec. Various Coleoptera collected by himself in the neighbourhood of Quebec, transmitted through the hands of Mr. Hoyer.

IONICUS of the Entomological Magazine. Various Coleoptera collected by himself in Cephalonia, Corfu, &c. transmitted through the hands of Mr. Walker.

Mr. HENRY DOUBLEDAY, of Epping. About two hundred and fifty specimens of British Lepidoptera, collected by himself

in the neighbourhood of Epping, expressly for the Entomological Club: the whole of these Lepidoptera were in the finest possible condition, and many of them very rare.

Mr. DAVIS, of London. A fine series of British specimens of *Saperda oculata* and *Trachys pygmaea*, and some specimens of *Orgyia gonostigma*.

Mr. T. INGALL, of London. Some rare Coleoptera from New Holland.

Mr. J. W. BOND, of London. Various Brazilian insects.

Mr. BOWERBANK, of London. A copy of Fuessly's "Archives," and a nest of *Vespa Crabro*, the common Hornet.

Mr. J. C. LOUDON. The 66th number of the Magazine of Natural History.

Mr. G. NEWMAN, Jun. A nest of *Vespa Britannica*.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the Club.

Mr. BOWERBANK exhibited a beautifully perfect specimen of *Castnia Coronis*; it was observed fluttering about some flowers in the garden of the Messrs. Loddige, of Hackney, and was taken alive. The pupa of this fine insect is supposed to have been imported from South America, in the earth attached to the roots of plants lately received from that continent.

SAMUEL ALEXANDER BURLINGHAM, Esq. of Worcester, having been at the last sitting proposed by Mr. Newman, and seconded by Mr. Bevington, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club, and Mr. Newman was appointed to inform him thereof.

JOHN WALTON, Esq. of Byard's Lodge, near Knaresborough, Yorkshire, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Hoyer, was unanimously elected an honorary corresponding member of the Entomological Club, and Mr. Bowerbank was appointed to inform him thereof.

The club then adjourned to Thursday evening, the 16th of November, at Mr. Davis's.

SITTING OF THE 16th NOVEMBER, 1836.

Present,—Messrs. Bennett, W. Christy, Davis, E. Doubleday, Hoyer, Showell, and Newman.

Mr. DAVIS in the Chair.

After the minutes of the last sitting had been read, a discussion of some length took place, as to the propriety of publishing the minutes of the Entomological Club. Mr. W. Christy observed, that as no notice whatever was taken of the proceedings of the Entomological Society, he thought the publication of the minutes of the Club might be construed, by those who were disposed to cavil, into something like an act of hostility. Mr. Christy had not the slightest wish to shun publicity, as he was sure that the more widely the acts of the Club were known, the more they would be approved; but he questioned the expediency of publication, at a time when all notice of the Entomological Society was abandoned.

Mr. BENNETT thought that the better way of getting rid of all such *appearance* of hostility,—he said *appearance*, for he knew of no hostility whatever existing towards the Society on the part of the Club,—was to notice the proceedings of the Society; and he regretted that such notice had been abandoned.

Mr. DAVIS inquired who would undertake to attend the meetings of the Society, in order to take minutes of the proceedings.

Mr. NEWMAN said, that there was a great difficulty in obtaining any correct information on the subject (especially as to the list of donations;) and this was the only reason why, as Editor of the Entomological Magazine, he had not noticed the Society's proceedings. The accounts prepared for the morning papers were, to use the mildest term, grossly erroneous. A recent report he had seen, stated that Mr. CURTIS, F.L.S., took the chair at the October meeting: he found, on inquiry, that Mr. CURTIS not only had never presided, but was not a member of the Society. It would never do to copy this as correct information.

The CURATOR read the following list of donations:—

Mr. A. INGPEN, of London. A portrait of the late Mr. Haworth.

Mr. G. R. GRAY, of the British Museum. A copy of his "Synopsis of the Species of Insects belonging to the Family of *Phasmidae*."

Mr. C. J. PAGET, of Yarmouth. Various rare British insects.

Mr. HOYER, of London. Several rare British insects.

Mr. INGALL, of London. Several British *Noctuae*.

Mr. G. SHOVE, of Deptford. Various British insects.

Mr. G. TRUSTED, of Ross. Several British *Curculionidae*.

Mr. W. STANGER, of Edinburgh. Some specimens of *Pycnogonum Balanarum*.

Mr. M'NAB, of Epping. A perfect specimen of that beautiful and valuable cerambycideous insect, *Omocantha Gigas*.

Mr. E. DOUBLEDAY, of Epping. His entire collection of Exotic Coleoptera; the Curator returning to the donor such as were duplicates, unrequired by the Club. By this munificent donation about 200 species are added to the collection of the Club.

Mr. J. C. LOUDON. The sixty-seventh number of the Magazine of Natural History.

Mr. W. CHRISTY, of London. His entire collection of British Lepidoptera, including many insects of great rarity.

Mr. JOSEPH FELL CHRISTY, of London. Various Lepidopterous and other insects, collected by himself in Jersey.

Mr. DAVIS, of London. A copy of Hoffnagel's "Diversæ," and a copy of Moufflet's "Theatrum Insectorum."

Mr. SHOWELL, of London. A splendid copy of Ramur's "Genera Insectorum;" this work contains upwards of 700 highly-finished engravings of insects, accurately coloured.

Resolved Unanimously,

That the thanks of the Club be given to these gentlemen for their various and valuable donations to the Club.

THOMAS MARSHALL, Esq. of Birmingham, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Newman, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Newman was appointed to inform him thereof.

HENRY METFORD, Esq. of Stoke Newington, having been at the last sitting proposed by Mr. Bennett, and seconded by

Mr. J. F. Christy, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Bennett was appointed to inform him thereof.

The Club then adjourned to Thursday evening, the 15th December, at Mr. Hoyer's.

SITTING OF THE 15TH DECEMBER, 1836.

Present,—Messrs. Bennett, Bentley, Chant, J. F. Christy, Foster, Hoyer, and Newman.

Mr. HOYER in the Chair.

The minutes of the last Meeting were read and confirmed.

Mr. NEWMAN, as Curator, exhibited the insects which Messrs. Walker and W. Christy had collected in the neighbourhood of North Cape; and also those collected by Mr. Walker alone in the course of an overland journey from thence to Tornea. In the Lepidoptera from the extreme north of Europe, the total absence of the *Noctuites*, at a season of the year when there was no night, might have been anticipated; yet there was one *Hepialus*, apparently *H. Velleda*, taken at the time of incipient nights. No *Colias* or *Vanessa* appeared among the butterflies. *Pontia Napi* was taken, and a specimen of *P. Rapæ* was seen. *Melitæa Dia* were taken, and also *Hipparchiæ Ligea* and *Blandina*, the varieties so intermingled that it was impossible to separate them; (a circumstance which leads to the conclusion that these constitute but a single species:) numbers of *Polyommatus Argus*, and a pair of *Hesperia Comma*; —in all, six butterflies. In *Geometrites*, there were several species, and a few minor Lepidoptera. In Diptera, the collection was rich; four noble *Tabani*, among them *T. Tarandi*, and all different from our British species; also abundance of the beautiful *Æstrus Tarandi*, and several very fine *Volucellæ*. In the *Tipulites* and minor Diptera, there was a great number of genera and species. In Hymenoptera, there were examples of the fine genera, *Cimbeæ*, *Lyda*, and *Sireæ*, &c.; also, several species of *Bombi*, the common wasp, and numerous ants (one of the latter was of an enormous size;) but only one fossorial insect. In Coleoptera, there was apparently a scanty supply; of the long horned tribes, there were fine examples of *œdilis*, and *scalaris*, also, numerous *Lepturæ*; abundance of *Pytho*

Mr. G. R. GRAY, of the British Museum. A copy of his "Synopsis of the Species of Insects belonging to the Family of *Phasmidae*."

Mr. C. J. PAGET, of Yarmouth. Various rare British insects.

Mr. HOYER, of London. Several rare British insects.

Mr. INGALL, of London. Several British *Noctuae*.

Mr. G. SHOVE, of Deptford. Various British insects.

Mr. G. TRUSTED, of Ross. Several British *Curculionidae*.

Mr. W. STANGER, of Edinburgh. Some specimens of *Pycnogonum Balanarum*.

Mr. M'NAB, of Epping. A perfect specimen of that beautiful and valuable cerambycideous insect, *Omocantha Gigas*.

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Mr. JOSEPH FELL CHRISTY, of London. Various Lepidopterous and other insects, collected by himself in Jersey.

Mr. DAVIS, of London. A copy of Hoffnagel's "*Diversæ*," and a copy of Mouffett's "*Theatrum Insectorum*."

Mr. SHOWELL, of London. A splendid copy of Rœmur's "*Genera Insectorum*;" this work contains upwards of 700 highly-finished engravings of insects, accurately coloured.

Resolved Unanimously,

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Mr. HOYER in the Chair.

The minutes of the last Meeting were read and confirmed.

Mr. NEWMAN, as Curator, exhibited the insects which Messrs. Walker and W. Christy had collected in the neighbourhood of North Cape; and also those collected by Mr. Walker alone in the course of an overland journey from thence to Tornea. In the Lepidoptera from the extreme north of Europe, the total absence of the *Noctuities*, at a season of the year when there was no night, might have been anticipated; yet there was one *Heptalus*, apparently *H. Velleda*, taken at the time of incipient nights. No *Colias* or *Vanessa* appeared among the butterflies. *Pontia Napi* was taken, and a specimen of *P. Rapæ* was seen. *Melitæa Dia* were taken, and also *Hipparchia Ligea* and *Blandina*, the varieties so intermingled that it was impossible to separate them; (a circumstance which leads to the conclusion that these constitute but a single species;) numbers of *Polygonomatus Argus*, and a pair of *Hesperia Comma*;—in all, six butterflies. In *Geometrites*, there were several species, and a few minor Lepidoptera. In Diptera, the collection was rich; four noble *Tabani*, among them *T. Tarandi*, and all different from our British species; also abundance of the beautiful *Æstrus Tarandi*, and several very fine *Volucellæ*. In the *Tipulites* and minor Diptera, there was a great number of genera and species. In Hymenoptera, there were examples of the fine genera, *Cimex*, *Lyda*, and *Sirex*, &c.; also, several species of *Bombi*, the common wasp, and numerous ants (one of the latter was of an enormous size;) but only one fossorial insect. In Coleoptera, there was apparently a scanty supply; of the long horned tribes, there were fine examples of *œdilis*, and *scalaris*, also, numerous *Lepturæ*; abundance of *Pytho*

depressus, *Agabus serricornis*, *Chrysomela marginata*, &c. A single example of *Trichius fasciatus*: a few *Carabus glabratus*, *Miscodera arctica*, *Elaphrus lapponicus*, *Campylus linearis*, &c. The other classes offered nothing remarkable, excepting *Boreus hyemalis*, which Mr. Walker found in abundance, skipping about some rocks with great activity. Mr. NEWMAN said, he believed that an entire list, with descriptions of the novelties, would appear in the Entomological Magazine.

The CURATOR read the following lists of donations:—

Mr. W. CHRISTY, of London. A copy of “the Aurelian’s Pocket Companion,” by Moses Harris.

Mr. NEWMAN, of Deptford. The 16th and 17th numbers of the Entomological Magazine, a copy of his “Sphinx Vespi-formis,” and a copy of his “Essay on the Head of Insects.”

Mr. BENNETT. A superb specimen of *Urania patroclus*, and various other rare Eastern Lepidoptera.

Mr. BUSK, of the Dreadnought. Some Chinese insects.

Mr. R. FOSTER, of London. A singular old print, representing a scorpion and tarantula.

Mr. J. W. BOND, of London. Some Brazilian insects.

Mr. J. S. BOWERBANK, of London. A collection of about 500 Brazilian insects, from Rio; among them numerous desiderata to the Club.

Mr. J. CHANT, of London. Various British Lepidoptera and Coleoptera.

Mr. J. C. LUDON. The 68th number of the Magazine of Natural History.

Mr. W. BENTLEY, of London. Various British Lepidoptera and Coleoptera.

Mr. W. CHRISTY, of London. Various interesting insects collected by himself in the neighbourhood of Hammerfest, in Norway.

Mr. W. RADDON, of Bristol. A fine series of *Actebia praeox*, *Mamestra albicollis*, several species of *Agrotis*, and various other Noctuides, and also of *Sirex juvenis*, *Anomala frischii*, &c.

Mr. J. EVELEIGH, of Manchester. A fine series of *Triphaena fimbria*, and of *Nyssia zonaria*, besides various other British insects.

Mr. E. DOUBLEDAY, of Epping. A specimen of *Entimus splendidus*, and other exotic Coleoptera.

Mr. J. HOYER, of London. A copy of "Harris's Exposition of British Insects."

Mr. F. WALKER, of London. A collection of insects made by himself in the vicinity of North Cape, or subsequently in a pedestrian tour from thence to Tornea.

Resolved Unanimously,

That the thanks of the Entomological Club be given to these gentlemen, for their various and valuable donations to the Club.

Mr. NEWMAN said, that in reference to what had passed at the last sitting, he had obtained, purposely for publication, a Report of the only meeting of the Entomological Society which had since occurred. In this Report the list of donations was deficient: he had, therefore, written the following note to the Secretary of the Society, hoping to obtain them.

To J. O. WESTWOOD, Esq.

"DEAR SIR,—It has been a matter of complaint from several members of the Entomological Society of London, that, as Editor of the Entomological Magazine, I have not published the list of donations presented each month to the Entomological Society, and also given a slight notice of the proceedings of the Society. I can remedy the latter very readily, by employing a competent person to take notes; but I have no means of obtaining a correct list of donations except from yourself; and I conceive an incorrect list would be nearly useless. I wish therefore to say, that if it be consonant with your views to hand me such a list, I shall feel obliged for it, as an addition to the information I am desirous of disseminating, and also as a probable means of serving the Entomological Society.

(Signed,) "EDWARD NEWMAN."

Mr. WESTWOOD replied immediately to this note as follows:—

To E. NEWMAN, Esq.

"DEAR SIR,—As the lists you mention will be too late for the next number of the Entomological Magazine, I must defer

replying definitely concerning them at present. I will only observe, that I have no personal objection to furnishing them to the Entomological Magazine; although I have refused taking upon myself the trouble of supplying notices of the proceedings of the Society to several of the periodicals.

(Signed,) "J. O. WESTWOOD."

Mr. NEWMAN thought Mr. Westwood's communication a very obliging one. He thought it would be unfair to burden Mr. Westwood, whose duties were most onerous, with copying the list of donations for a Magazine in which he took no interest:—permission to copy would be quite sufficient.

C. J. PAGER, Esq. of Yarmouth, having been at the last sitting proposed by Mr. Davis, and seconded by Mr. Hoyer, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club; and Mr. Hoyer was appointed to inform him thereof.

ROBERT FOSTER, Esq., of Stamford Hill, having been at the last sitting proposed by Mr. Newman, and seconded by Mr. Bennett, was balloted for, and unanimously elected an honorary corresponding member of the Club.

The following routine of meetings was then agreed on for the year 1837:—

January	at	Mr. BENNETT'S.
February	—	Mr. BOWERBANK'S.
March	—	Mr. BEVINGTON'S.
April	—	Mr. NEWMAN'S.
May	—	ANNIVERSARY.
June	—	Mr. CHRISTY'S.
July	—	Mr. DAVIS'S.
August	—	Mr. HOYER'S.
September	—	Mr. NEWMAN'S.
October	—	Mr. BENNETT'S.
November	—	Mr. BOWERBANK'S.
December	—	Mr. BEVINGTON'S.

ART. XL. — *Proceedings of the Entomological Society of France.*

SITTING OF THE 1st JUNE, 1836.

M. DUPONCHEL in the Chair.

Present,—Messrs. Lefebure, De Cerisy, Rippert, &c.

The following list of donations was announced :—

M. DUMENIL. “ Buffon Classique,” livr. 181^e à 195^e.

Mr. WALKER, of London. Number XV. of the Entomological Magazine.

M. DE SAINT FARGEAU. “ Histoire Naturelle des Insectes Hyménoptères,” tome 1^{re}.

M. J. F. PICTET. “ Note sur les Organes Respiratoires des Capricornes,” also “ Description de quelques nouvelles Espèces de Néuroptères du Musée de Genève.”

The ACADEMY of BONN. “ Acta Academiae Naturæ Curiosorum,” tom. xvii. part 2.

The thanks of the Society were returned for these donations.

M. AMYOT read the translation of a letter written in Chinese, by M. Joseph Li, who left Paris in 1829 as a missionary, to preach the Roman Catholic religion to the Chinese. The letter was dated 8th December, 1835, and addressed to M. S. Julien, member of the Institute. It was as follows :—

“ We have not this year suffered losses by water, but the ravages of certain yellow insects have been truly terrible. The oldest residents here, 80, 90 years of age, have never seen the like. This extraordinary pest has afflicted alike the marshy and the mountainous regions. The drought at first did great injury to the crops, both in high and low situations; then came these insects to unite with it in causing destruction; they formed clouds in the distance, which as they rose obscured both sun and moon. All who saw them were terrified. Wherever they alighted the finest and most abundant harvest was instantly devoured, and the fields became as bare as one's hand. The inhabitants everywhere fled to the mountains.

These ravages continued, and produced immense loss in every quarter. The crops, though housed, often became the prey of these devourers, excepting always the *sesame*, the *dolichos*, and buckwheat; these were left untouched. Wherever the country had been inundated, and in consequence no crops were left to be destroyed, these destructive insects entered the houses, devouring cloth and whatever they could meet with. These insects began to appear in April, and continued their ravages incessantly till the frost and snow."

M. SERVILE communicated to the Society an intended journey to Sardinia, by M. Géné, of Turin. M. Géné, he said, was now at Genoa.

M. SERVILE read a Report of a Collection made in Cuba, by M. Ramon de la Sagra: a copy of the Report signed by the Council was forwarded to M. Ramon de la Sagra.

M. DUPONCHEL read a paper by M. de Fonscolombe, on the economy of a spider, which appeared to belong to the genus *Atypus*. The memoir being unfinished, the secretary was commissioned to apply to the author for the concluding portion.

M. D'DARDOUIN, of Aix, having been proposed by M. Servile, was admitted a member of the Society.

SITTING OF THE 6th JULY, 1836.

M. DUPONCHEL in the Chair.

The following list of donations was announced:—

M. DUMENIL. "Buffon Classique," livr. 196^e à 199^e.

ROYAL SOCIETY OF LONDON. A catalogue of 7385 stars, observed at Paramatta, and published in the Transactions of the Royal Society of London. Also a list of the Fellows of the Royal Society of London, and a record of their sittings.

M. DUPONCHEL. "Complement de l'Histoire Naturelle des Lépidoptères," 19^e livr.

MM. CASTLENEAU and GORY. "Histoire Naturelle et Iconographie des Insects Coléoptères," 6^e. et 7^e. livr.

M. ANTONIO VILLA, of Milan. "Saggio della Storia Naturale del Monte Legnone e del Piano di Colico Dissertazione Inaugurale;" also, "Coleoptera ex Fontibus Tanari, in Alpibus Niracensibus."

M. GUERIN communicated to the Société the ravages occasioned by a species of *Alucita*, which had destroyed the wheat in the department of *Indre*. This insect in certain years, though at unequal periods, appeared in great abundance; in other years a parasitic *Ichneumon* destroyed the greater part of them. These observations had been transmitted to M. Guérin by M. Herpin, a physician at Neboursin, near Vatan, on the road from Paris to Toulouse. M. Guérin was requested by the Society to point out the various remedies proposed for the ravages of those insects, which have been found to attack corn whilst they are in the larva state. They are collected in a pamphlet, entitled "*Programme des prix proposés par la Société Royale d'Agriculture, dans sa séance publique d'Avril, 1831.*"

M. BUQUET gave a satisfactory report of M. Leprieur, who is engaged in traversing the interior of Guiana.

The death of M. ALBERT ALAVOINE, of La Basse (Nord), was announced. He had been a member of the Society. He died on the 25th June, 1835. His collection is now in the museum of Valenciennes.

M. VON GEHEUR, of Paris, having been previously proposed by M. Solde, was admitted a member of the Société.

SITTING OF THE 3D OF AUGUST, 1836.

M. DUPONCHEL in the Chair.

The following list of donations was announced:—

M. ALPHONSE KARR. "Du Ver Blanc: exposé dans des ravages, etc. par M. Vibert."

M. DUPONCHEL. "Supplément a l'Histoire Naturelle des Lépidoptères," 6 Livr.

M. GUERIN. "Memoirs sur les Hypérines." "Recueil No. XXVI. de la Société libre d'Agriculture, Sciences, &c. d'Evreux." "Memoires de la Société de Physique et Histoire Naturelle de Genève," Tome VII.

M. KLUG. "Insectes de l'Ile du Prince, du Voyage d'Ermann, decrits par M. Klug:" also "Trois Genres de Carabiques nouveaux, extraits des Annales de Wiegmann."

M. DUPONCHEL read a letter which had been addressed to him by M. Daube, a member of the Society, on the subject of *Colaspis barbara*, Fab. "It were much to be desired," said the writer, "that the insects in question, denounced previously in the '*Annales*' as injurious to farmers, were confined to the kingdom of Valence; every year our lucern, after the first cutting (that is to say in the month of June), is devoured by the larvæ of this insect. If, instead of collecting the larvæ in a net, as is the present practice, they were to collect and destroy the perfect female, there is no doubt but a better result would follow. Indeed, from a plant so bushy as the lucern, one can only sweep into the net those larvæ which happen to be on the tops: and as the larvæ fall at the least movement of the plant, it is very difficult to destroy any considerable number, even though the operation be continued repeatedly. I employ the following plan, which I consider every way preferable; for if it does not entirely destroy the evil, it undoubtedly greatly abates it. The *Colaspis barbara* begins to appear in the beginning of May. At this period they may be found *in copula*, and closely adhering to the stem of the lucern. Some days after, the males disappear, and the females, with bodies remarkably increased in size, being no longer able to use their wings, run hither and thither to deposit their eggs. The laying of eggs continues from eight o'clock in the morning till between two and three in the afternoon. Nothing is more easy than to take the females during the operation; for they lay the eggs at the very tips of the lucern, and the enlargement of their bodies renders them very conspicuous. Every female lays, in my opinion, about 500 eggs; now, if a woman were employed in collecting them, supposing she gathered but 2000 per day, it is evident how many would be destroyed, for the period of oviposition lasts but from ten to twelve days. I had this year a field of lucern enclosed by walls; and perceiving that the lucern in the neighbourhood was already becoming a prey to this insect, I employed a woman, who, in eight days, collected from thirty-five to forty kilogrammes of the females. By this means I have had the pleasure of cutting a hundred *quintals* of lucern at a time, when the crops of my neighbours have been entirely destroyed. Having no longer any thing to eat, the larvæ attacked the santfoin, and even the wheat. M. DAUBE, in the same communication, mentions the injury done to the

vines by *Altica oleracea*, which, for ten or eleven years, has been the scourge of the neighbourhood of Montpellier. Great quantities of them are destroyed every year: in one district alone they collected a hundred *quintals*. The perfect insect gnaws the buds, and the larvæ eat the leaves and the grapes."

M. GUERIN exhibited a fragment of a branch of the horse-chestnut sent to him by M. Aubé, in the interior of which the larva of *Bryophila Algae* had taken up its habitation. This peculiarity in the economy of this larva was before entirely unknown. It was only known that the larva fed on those lichens which grow on the bark of trees, and in which it usually constructs its little cocoon against the bark, and composed of the fragments of the lichen. The larva brought by M. Guérin did not leave its hole: M. Rombur, in order to examine it more closely, broke off a part of the branch, and the larva did not remain long exposed, but dug its way further in, throwing behind it *débris*, which resembled fine sawdust.

M. SERVILE gave an account of the work of M. Vibert on the Larva of the common Cockchafer, and remarked on the new discoveries recorded in this book. This observation related more especially to the period occupied in the full development of the insect, which is three complete years. This larva encircles the plant just below the ground, to devour it at its leisure; and itself serves as the food of the mole-cricket, which insect destroys an immense number of them, but which itself causes great injury by eating through the roots of those plants which oppose its progress.

M. SERVILE read the following note, extracted from the *Cabinet de Lecture* of the 29th June last. "A German paper states, that a Society formed at Quedlinbourg has collected nineteen million cockchafers, for the purpose of extracting oil from them. The experiment had been previously made in Hungary, and three measures of oil had been extracted from eight measures of cockchafers. The insects were placed in pots of earth, which were covered with straw, and then with network of metallic threads; then the whole was placed upside down on a heated utensil destined to receive the oil, which flowed from the insects. This oil will be particularly serviceable in greasing wheels."

M. CHEVROLAT announced that he had received from Porto Rio a species of *Carabus*, which he named *basilaris*, and of

which he exhibited a drawing. He observed that there existed already in the Antilles, a species described by Fabricius, under the name *Splendens*. The country assigned by Fabricius to this insect, had hitherto been regarded as erroneous; because it was not thought that a true *Carabus* could be found in the Antilles; and the name *Splendens* had consequently been applied to a species from the Pyrenees. As the latter insect displayed on its suture the coppery shade, M. Chevrolat presumed that it was different, and therefore that a new name should be given it.

M. GUENEE addressed to the Society the following note on the larvæ of two species of *Bryophila*, which he had described in the "Annales:" these were *B. raptricula* and *B. perla*. "Having committed the fault," says the author, "of rearing together those larvæ which were found in the same places, and almost at the same time, I have been led into the error which I now correct. The larva which is thought to be that of *B. raptricula*, and which I have described under that name, really produces *B. perla*; and that which has hitherto been supposed that of *B. perla*, produces *B. raptricula*. The rearing of a great number of individuals leaves me without a doubt on this head. These two larvæ, well figured in the works of MM. Boisduval, Rombur, and Graslén, are there also transposed in the naming. M. Treitche was about publishing the same statement in his Supplement; but not having his work before me, I cannot say whether he has fallen into the same error. Nevertheless, as he refers for the figure of *B. raptricula*, to the above-named works of Boisduval, Rombur, and Graslén, it may fairly be inferred that he is equally mistaken. He has only, described the larva of *B. perla*, from one of his correspondents, M. Musschl; but I have neglected, in translating that volume, to take a description of the larva, supposing myself certain of its identity. I shall give figures and rectified descriptions of these larvæ in the work published by M. Duponchel, who has kindly wished me to join with him as a fellow-labourer."

M. VILLIERS. A note on *Branchipus Stagnalis*.

M. SOLIER. A description of a new species of *Cryptocephalus*.

M. H. LUCAS. Some observations on the manner of oviposition in Ixodes; and an addition to a work entitled "Memoires sur plusieurs Acachnides Nouvelles appartenent au genre *Atta* de M. Walcnaker."

M. GRASLIN. "Memoir, with descriptions of *Chelonia rerecunda*, *Zygana Europæa*, *Thanaos Cervantes*, *Cleophana Cyclopea*, *Ophiusa nubilaris* and *Orgyia Zoraida*.

M. DE WAGA, Professor of Natural History at Warsaw, having been proposed by M. de Theys, was admitted a member of the Society.

M. BOUCHARD CHANTERREAUX, having been proposed by M. Serville, was admitted a member of the Society.

ART. XLI.—*Proceedings of the Entomological Society of London.*

SITTING OF THE 5th DECEMBER, 1836.

Rev. F. W. HOPE in the Chair.

The minutes of the last meeting were read and confirmed:—

A list of donations, from various British and Foreign Societies and individuals, was read; and thanks voted to the respective donors.

Mr. YARRELL exhibited the larvæ of *Agrotis Segetum*, received from near Walden, in Essex. He said it was stated to be as destructive to the turnip as the fly; eating into the bulb of the root, and entirely destroying whole crops. Mr. Hope, in some subsequent observations, mentioned the occurrence of the same in great numbers in Shropshire and Herefordshire.

Mr. WESTWOOD exhibited the nest of a *Vespa*, from which he had taken a specimen of the insect, with a parasite. The nest had a circular hole penetrating through the centre, which he supposed to be a common gangway; and that, when occasion required, the insects effected an enlargement of their nest by accretions ranged round the hole, working from the inside.

Mr. WESTWOOD exhibited an original letter of Linnæus to the late Mr. Drury.

The CHAIRMAN exhibited a collection of *Trilobites*. He said it was his intention to publish a Monograph of British species; and should be obliged to any gentleman for any communication; or the loan of any specimen should be duly acknowledged.

A list of Coleoptera, taken in the Scilly Islands by Mr. HOME, was read in a letter from that gentleman; with a description of a single specimen of a genus which he claimed to be entirely new to British Entomology.

A Flower-Pot in which had been deposited some roots of the sugar cane, with the original mould, exhibited last year, was produced; in which had sprung up, in the Society's room, a grass new to several British botanists who had seen it; and on the blades of grass had been discovered an *Aphis*, which Mr. Westwood described as entirely new. Specimens of the *Aphis* were exhibited.

A letter communicated by Mr. JOHNSON was read, giving an account of the rapid increase of the mole-cricket in the island of Jamaica, since a particular hurricane a few years back. This insect had become so destructive to the grass and young cane, that any suggestions for its extermination would be truly valuable. With regard to the hurricane, it was suggested, that probably some destroyer of the insect in one or more of its stages had been swept away by the hurricane, rather than that it had been brought to the island by that visitation. One or two members thought that the eggs might be searched after, and destroyed in sufficient quantities to keep the insect down; others thought that the full-grown insect, being of so considerable size, might be persecuted to destruction. Mr. Waterhouse doubted whether any such destroying means could match the fruitful powers of nature. He attributed the great increase of particular species of insects very much to a succession of the same crops in or near the same localities; and thought that a remedy would be found in a skilful distribution and occasional total omission of infested crops.*

An original communication from PALLAS, the Russian Entomologist, addressed to the Aurelian Society of London, was read. It gave a very interesting account of the habits of

* The idea that the mole-cricket is injurious to vegetation, is daily losing ground: it is now generally supposed to be beneficial than otherwise, by devouring subterraneous larvæ, &c.—ED.

the Purple Emperor, from personal observation, and of the growth and changes of the larva. Mr. Westwood adduced the fact, of this valuable communication from so distinguished an individual never having yet seen the light, as a powerful argument in favour of such a Society publishing its transactions.

Mr. WESTWOOD read a Monograph by himself, on *Scleroderma*, an exotic family of *Chalcidites*, from specimens in the Royal Museum of Berlin, and in his own possession; illustrated by drawings.

Specimens of a collection of insects made by Mr. Darwin, (principally in Australasia,) were exhibited; with descriptions and drawings by Mr. Waterhouse. Among them was an Hymenopterous insect with distinct Coleopterous Elytra, and other strikingly aberrant specimens. An interesting discussion ensued on circular systems. Mr. Waterhouse went at length into the subject of analogy and affinity, and said that they were often confounded by system-makers. He had closely investigated the class Coleoptera, with a view of discovering natural affinities; but had been obliged to abandon the idea, though he stated his belief that analogies existed, frequently running parallel through whole groups. Mr. Westwood severely ridiculed Mr. Swainson's illustrations of typical perfection, and subtypical tendency to imperfection, or evil; and the CHAIRMAN expressed his total disbelief in all circular arrangements.—Adjourned to the 2d January, 1837.

ART. XLII. *List of Entomological Works.*

1. *British Entomology*; by John Curtis. Nos. 151—156. July to December, 1836.

2. *Illustrations of British Entomology*; by J. F. Stephens. Nos. 83, 84. 1836.

3. *Monographie des Cétœines et Genres voisins, &c.*; par M. H. Gory et M. A. Percheron. Livraisons 14, 15.

4. *Magazin de Zoologie*; par F. E. Guérin. Paris.

5. *Iconographie, &c. des Coléoptères d'Europe*; par M. le Comte Dejean et M. le Docteur J. A. Boisdual. Tome IV. Livraison 12.

6. *The Edinburgh New Philosophical Journal*, conducted by Professor Jamieson. April—July, 1836. *Further Illustrations of the Propagation of Scottish Zoophytes*; by John Graham Dalyell, Esq. July—October, 1836. *Memoir on the Metamorphoses in the Macroura, or Long-tailed Crustacea, exemplified in the Prawn (Palæmon serratus)*; by J. V. Thomson, Esq. F.L.S. Deputy Inspector General of Hospitals. (Communicated by Sir James M'Gregor, Bart., M.D., F.R.S., &c.)

7. *The American Journal of Science and Arts*, conducted by Benjamin Silliman, M.D., LL.D. Vol. XXX. No. 2. July 1836. *On two American Species of the Genus Hydrachna*; by James D. Dana and James Whelpley.

8. *Thomson's Records of General Science*. Vol. I. *An Account of some Crustacea, which occur in the Coal Formation*; by John Scouler M.D., F.L.S., Lecturer on Mineralogy to the Royal Dublin Society.

9. *Transactions of the Zoological Society of London*. Vol. II. Part I. 1836. *Some Account of the Crustacea of the Coasts of South America, with Descriptions of New Genera and Species, &c.*; by Thomas Bell, Esq., F.R.S., L.S., G.S., & Z.S. *Some Observations on the Economy of an Insect destructive to Turnips*; by William Yarrell, Esq., V.P.Z.S., F.L.S., &c.

10. *Annales de la Société Entomologique de France*. 1836. *Troisième Trimestre*.

11. *Synopsis of the Species of Insects belonging to the Family of Phasmidæ*; by George Robert Gray, M.E.SS. London and France. London. Longman: 1835.

THE
ENTOMOLOGICAL MAGAZINE.

APRIL, 1837.

ART. XLIII.—*Researches on the Insects injurious to the Vine, known to the Ancients and Moderns, and on the Means of preventing their Ravages.*

BY M. LE BARON WALCKENAER.

[Extracted from the Annales de la Société Entomologique de France.]

(Continued and concluded from p. 144.)

SECTION II.

DETERMINATION OF THE SPECIES OF INSECTS INJURIOUS TO
THE VINE KNOWN TO THE ANCIENTS AND MODERNS.
REMEDIES AGAINST THEIR ATTACKS.

1. *Preliminary Observations.*

IN the first part of these Researches I have examined the passages of ancient writers relating to the names of insects injurious to the vine, in chronological order, where this order did not interfere with their derivation, because that plan appeared best calculated to attain the end I had in view.

No language remains stationary: on the contrary, all, like the people who speak them, are subject to the influences of time, revolutions, and custom. Contemporary writers use the same word with very different significations, either because they are not equally well acquainted with the objects the word is usually intended to designate, or, because they have not the same intention in employing it. The intention of one author may perhaps be best answered by a word being used in its

simple and precise meaning; while that of another writer, wishing to convey a vague or general idea, will, by its being used in a figurative sense, require that it should bear a meaning totally different.

The examination of every passage in which the same word occurs will afford us an opportunity, in the first place, of ascertaining, with a greater or less degree of precision, the meaning which each author attached thereto, and also various circumstances in connexion with the insect, by means of which it may be identified.

Each word has been submitted to a critical investigation; and we shall recapitulate the results thus obtained. To compare the imperfect notions of the ancients with the more accurate knowledge of the moderns, it will merely be requisite to remember the results of these investigations; and we shall not in this last and most difficult inquiry have the least occasion to perplex ourselves with philological discussions: should it seem requisite to enter into any fresh disquisitions, it will only be on the occurrence of such words as may give occasion to useful or curious digressions, and not of those which necessarily belong to our more immediate and avowed subject.

Here, however, it does not appear requisite to observe the same order of discussion as in our first Section.

It is not now our object to inquire further into the meanings given by each author to the same word, independently of its true and legitimate signification, but to fix its real sense from the different significations attached to each, and from a consideration of the various ways in which the words have been employed. Things, not words, are here the subject of our inquiry: and this will guide us in the choice of the plan best adapted to the end proposed.

Thus we shall begin with insects which have not a great deal to do with the main object of our inquiry, or rather those concerning which the information furnished by the ancients has only given us vague or general notions: and we shall afterwards pass on to those which are the principal object of our research, and respecting which the passages we shall examine will afford us circumstantial details or precise information; thus following the method of algebraists, who first discard from their equations adventitious numbers, or those which can only give imperfect results.

2. *Spondylus*, or *Sphondylus*.—*Scarabeus Melolontha*, Linn.—*The Cockchaffer*.—*Digression on the several kinds of Cockchaffer known to the ancients, and on some allied genera; and respecting the use of the word Melolontha by ancient and modern writers.*

Agreeably to our proposed plan, *Spondylus*, or *Sphondylus*, will be the first word for our consideration.

From a comparison of passages we are warranted in concluding that the larva of this insect is of sufficient size to have been considered a kind of small serpent; that it eats the roots of every kind of plant except the *birthwort*, or wild vine, *Vitis sylvestris*, which is by some supposed to be the *Clematis*, but which is certainly not the vine.^a

We are acquainted with but one kind of larva which entirely agrees with this description: it is that of the common cockchaffer, so well known to horticulturists by the name of white worm. The larva of *Melolontha Fullo*, or *M. vulgaris* of modern naturalists, is, we consider, the *Spondylus* of Pliny and Aristotle.

We read in Aldrovandus,^b that Agricola says the modern Greeks give the name of *Spondylus* to a kind of worm with a red head and white belly, about the size of the little finger, which is found under ground, rolled up amongst the roots of culinary vegetables. This is, certainly, the larva of the cockchaffer. But here we would ask, was Agricola acquainted with the insect alluded to by the modern Greeks; and do they now use the word *Spondylus* for the white worm?

If the *Spondylus* of Pliny and Aristotle be the same insect, it follows that this last named naturalist, who has designated a perfect insect under this name, was aware of its metamorphosis; and this will not appear surprising, when we recollect that Aristotle, as I before remarked, has correctly described the metamorphosis of the cabbage-butterfly; and afterwards alludes to the general fact, observing, that most insects come from a worm (*scolex*); “the worm grows,” he says, “and becomes an articulated animal.”^c Aristotle well observes, that

^a Arist. and Plin.

^b Aldrovandus *de Insectis*, 1618, Frankfort, p. 225.

^c Arist. lib. v. c. 19, tom. i. pp. 286 et 287; lib. i. c. 4, No. 1, et l. 5, 12 et 17, de l'ed. de Schn. 1811, 8vo.; tom. ii. c. 17; tom. ii. p. 207.

spiders, *Cicada*, and crickets are not produced from worms, but from animals resembling the perfect insect.

The opinions of Aristotle on the metamorphosis of insects, although not entirely free from errors, are on the whole singularly correct, and prove him to have been a most persevering observer, and to have possessed a wonderful degree of skill and tact in the generalization of scientific facts: at times even foreseeing discoveries which have since been made.

We must not forget to remark, that it is in connexion with the subject of the mode in which insects copulate, that Aristotle mentions the *Spondylus*; and the cockchaffer is the most likely insect of all others to be frequently seen in the act of copulation.

From the passage in Pliny, and the assertion of Agricola, it would seem that the Romans and the Greeks of the Lower Empire used the word *Spondylus* to designate the larva of that large species of cockchaffer of whose metamorphoses we are ignorant.

Though there can be no doubt that the Latins as well as the Greeks were acquainted with an insect so generally distributed as the cockchaffer, and which does so much mischief to agriculturists, even in the perfect state eating the leaves of plants and trees; we do not know whether the Romans gave a specific name to this insect, or designated it by the general denomination, *Scarabæus*, or *Cantharis*, words thus so often made use of for all kinds of *Coleoptera*.

Fabricius, who separated the cockchaffers from the genus *Scarabæus*, Linn., gave the name *Melolontha* to the genus to which they belong; a word employed by the Swedish naturalist for the specific name of the commonest species. This word is taken from Aristotle, who uses it, as well as *Cantharis* and *Carabus*, for several kinds of beetles, which in our natural systems belong to widely different genera, and even families. It is in conformity with the opinion of the learned in the time of Aldrovandus,^d—an opinion adopted by Bochart,^e—that Linnæus makes the *Melolontha* of Aristotle, and our common cockchaffer, the same insect; but, as Latreille^f has well observed, a comparison of certain passages in Suidas, Pollux,

^d Aldrovandus, *de An. Insect.*, p. 17.

^e Bochart. *Hier.*, pt. ii. lib. iv. c. 2.

^f See Latreille's memoir on the insects painted or sculptured on ancient Egyptian monuments, in the *Mémoires sur divers Sujets*, 8vo.

and a scholiast on Aristophanes, show that the word *Melolontha* was applied by the Greeks to insects of brilliant colours, and cannot, therefore, be considered synonymous with our cockchaffer.

Aristophanes, in his "Clouds," makes Socrates say to Strepsiades, "Let your thoughts go like the *Melolontha*, which they let go into the air with a string to its leg." The ancient scholiast remarks that this *Melolontha* is an insect of a golden colour, which the children hold with a string, and which they let off to fly.^g

Now we know that in modern Greece at the present day children tie a piece of thread to the legs of that beautiful golden-coloured insect known to naturalists by the name of *Cetonia fastuosa*, which is common there, and make them fly, just as children here serve the common cockchaffer; the name *Melolontha* must, therefore, have been applied to an insect of the genus *Cetonia*, and not to our cockchaffer.—And here an exceedingly interesting question for the antiquarian occurs, respecting the exact interpretation of a very remarkable passage of Pliny. That naturalist, speaking of the different kinds of amulets that were in use in his time for the cure of quartan agues, says they made use of, for this purpose, three kinds of beetles. "The first," he says, "is the beetle which rolls up little balls (*qui pilas volvit*), and on account of which the Egyptians include beetles amongst the number of the gods." In this description we shall at once recognise two or three insects belonging to the coprophagous family, *Ateuchus sacer*, Fab. (*Scarabæus sacer*, Linn.), or *A. laticollis*, and *A. Egyptiorum*, brought from Nubia by M. Caillaud, and recently described by M. Latreille,^h who is inclined to consider this species exclusively as the sacred *Scarabæus*, so often sculptured by the Egyptians on their monuments, and separately out of hard stones of different kinds. But it appears to me he is in error. I have lately examined all the ancient figures of Egyptian *Scarabæi* in the *Bibliothèque du Roi*, where the specimen of *Ateuchus Egyptiorum*, presented by M. Caillaud, is also preserved; and I am convinced that amongst the Egyptian sculptures which represent *scarabæi* with smooth elytra, a certain number have been modelled after *Ateuchus sacer*, Fab.;

^g See Camus's Notes on Aristotle's *Hist. Anim.* 4to. vol. ii. p. 478.

^h Caillaud, *Voyage à Méroë et à Fleuve Blanc*, p. 192; *Atlas d'Hist. Nat. et d'Ant.* pl. 58. Latreille in Cuvier's *Règne Anim.* vol. iv. p. 533.

and some, but a much smaller number, in imitation of *A. laticollis*, but all the figures with striate elytra have *A. Egyptiorum* for their type. Thus the *Scarabæus* of the Egyptians is referrible to three different species, which, after all, are very much alike, and probably possess an economy perfectly identical, but which are readily and with certainty to be distinguished in the sculptured figures.¹ *A. sacer* is black, and seems to have been more common than *A. Egyptiorum*, which is of a golden green colour, and would appear to have been the insect imitated by the artists of Lower Egypt, whilst *A. Egyptiorum* furnished the model for the sculptors of Upper Egypt. M. Caillaud found this insect in Senaar, not in Egypt. However, he found elytra and some other parts of this insect in mummy cases, entombed in Egypt; from which it would appear that it formerly existed in that country, and possibly does so even at the present day. Aristotle and Aristophanes have both used the word *Cantharis* to designate the sacred *Scarabæus*. I therefore infer, that both intended *A. Egyptiorum* of M. Caillaud.

This first kind of *Scarabæus* of which Pliny speaks, is, I think, the first also of the three species mentioned by Horus Apollo, as being held in great veneration by the Egyptians.

The second kind of *Scarabæus*, employed as an amulet for the cure of the quartan ague, is made use of, Pliny says, by the magicians, and must be picked up with the left hand. It has small bent horns, *cui sunt cornicula reflexa*.

From this description Hardouin, and other commentators after him, erroneously consider this insect to have been a *Lucanus*.

The *Lucanus*, vulgarly called the stag-beetle, is an insect of which Pliny has given a most correct description, and the name which he assigned it has on this account been retained by subsequent naturalists. He mentions its long mandibles, forked at the extremity, and armed with teeth; and he relates a custom then prevalent of suspending these mandibles, or, as he terms them, horns, round the necks of children, as a preservative against the bites of venomous animals—"Cornua prælonga

¹ Compare Olivier, *Col.*, vol. i., No. 3, p. 150, No. 183. pl. 8, f. 59, var. *B*. His var. *A*. is another insect: it has a scutellum between the elytra, and the form of its elytra is different. Schon. *Syn. Ins.* vol. i. p. 18; Cail. *Voyage à Mervé et à Fleuve Blanc*, vol. iv. p. 272; *At. d'Hist. Nat. et d'Ant.* ii. 58, p. 10.

* Pl., *Hist. Anim.* lib. xii. c. 34.

bisulcis dentata forcipibus in cacumine. This by no means agrees with the little bent horns of that kind of beetle which is considered by some to be alluded to in this passage.

Pliny's second kind of *Scarabeus* seems to me to be also the second sort mentioned by Horus Apollo; it has, according to that author, two horns, and resembles a bull, and is dedicated to the moon.

We think that this is the same species as the large dung-beetle with two horns, brought from Egypt by M. Savigny, and named by him *Midas*. It is sculptured in the temple of Karnak, and appears, according to Latreille, to belong to the genus *Onitis*, recently separated from the other *Coprophaga*.¹

M. Millin, in his notice on the Egyptian sculptures, in the *Bibliothèque du Roi*, says, that he saw in the Cabinet of Antiquities of St. Genevieve the figure of a *Scarabeus*, which he considered to be *S. Mimas*. In this, however, M. Millin is mistaken, for *S. Mimas* is a species peculiar to America; but the error of this worthy archæologist is by no means an important one, for *S. Mimas* is coprophagous, like the Egyptian *Midas*, and in colour resembles it also. We may conclude, therefore, that the Egyptian figure mentioned by M. Millin represents *Onitis Midas*, found in Egypt by Savigny.

The third kind of beetle mentioned by Pliny as used as an amulet against the quartan ague, was called "the fuller," (*fullo*); it was spotted with white; they cut it in two, and tied a half to each arm, while the two other kinds were only tied to the left arm. *Tertium qui vocatur fullo, albis guttis, dissectum utrique lacerto adligant, cætera sinistro.*

No commentator has said any thing on this remarkable passage, or respecting the insect known to the Romans by the name of *Fullo*: naturalists have not been equally careless.

Mouffet, in his posthumous work, published in 1634, describes the largest species of European cockchaffer, which is 1½ inch long, and is readily known by the white spots on its prothorax and elytra, and combats the opinion of those authors who consider the *Fullo* of Pliny a dung-beetle, or an earwig; and argues that the Roman naturalist intended to designate the large cockchaffer with white spots by this name.^m

Ray, whose History of Insects appeared in 1710, coincides

¹ Lat., *Mem.*, pp. 148 and 153. Consult also *Desc. de l'Égypte*, vol. iii. p. 34.

^m Mouf. *Insect. sive Minim. Animal. Theatrum*, 1634, folio, p. 160.

in this opinion;ⁿ and, more lately, M. Schœnherr, in his laborious work, especially devoted to the synonymy of insects, quotes Pliny for his *Melolontha Fullo*.^o

It is with regret that I differ from an opinion so well established as this certainly is by the authority of eminent naturalists; but observations which I have made appear to me to prove its incorrectness. I have examined a great number of sculptures, in which insects are introduced, and many figures of insects, and observed some which had probably been used as amulets, having holes bored in them in such a way as to allow of their being hung round the neck, and in every instance the insects represented were *coprophaga* or *Cetonia*,^p and can in no instance be taken for any kind of cock-chaffer, all the species of which are so easily distinguished by their longer make. A similar result has been obtained from the examination of all the obelisks and other Egyptian monuments, of which drawings have been published. I only speak here of *Scarabæi* and other coleopterous insects, and not of the bee or wasp, which is sculptured on the obelisks of Luxor.

Latreille, from a similar examination, has obtained similar results. It would therefore appear that the *Melolontha Fullo* of Pliny must be looked for amongst the *coprophaga* or *Cetonia*, and not among cockchaffers.

Pliny says that the green *Scarabæus* has the property of improving the sight, and that the engravers of precious stones rest their eyes by looking at these insects. *Scarabæi viridis natura contuentium visum exacuit, itaque gemmarum sculptores contuitu eorum acquiescunt.*^q

Marcellus Empiricus follows Pliny in relating the same fact, and adds that this beetle is of the colour of the emerald, *scarabæus coloris smaragdini*. This description applies exactly to *Cetonia fastuosa* and *Cetonia aurata*, especially the former.

These two species are of a beautiful golden green colour, or of the colour of the emerald; but *C. aurata* has white spots on its elytra (*albis guttis*), which serve to distinguish it from the other species: it is nine lines in length, and is frequently

ⁿ Ray, *Hist. Insect.*, 1710, 4to, p. 93.

^o Schœnherr, *Synon. Insect.*, p. 3. Upsalia, 1817, 8vo. p. 164.

^p Amongst the *Scarabæi*, in the *Bibliothèque du Roi*, there are several figures which may be referred to the *coprophaga*, but no *cetonia*; but I have seen great numbers of these in other cabinets.

^q Plin. *Hist. Nat.*, lib. xxix. c. 38; tom. viii. p. 270.

found in gardens on roses and other flowers. The large cockchaffer with white spots, *Melolontha Fullo*, of modern naturalists, is, on the contrary, very rare, and is never met with except on high downs and in the neighbourhood of the sea-coast. From all this I conclude it is *Cetonia aurata* which is the object of the superstition Pliny speaks of, and to which he gives the name *Fullo*.

To recapitulate : Aristotle applies the word *Spondylus*, or *Sphondylus*, to the common cockchaffer, in the states of both larva and imago.

In Pliny, who was not acquainted with the metamorphosis of the cockchaffer, the word *Spondylus* is used only for the larva of that insect, or white worm, considered then by some as a small serpent, and which was known to the Greeks in Agricola's time (the seventeenth century) by the name of *Spondylus*.

In Pliny the *Scarabæus qui pilas volvit*, which is an object of religious worship with the Egyptians, and which cures the quartan ague, is the *Ateuchus Sacer*, and *A. laticollis* of Fabricius, and also the *A. Ægyptiacus* of Latreille and Caillaud.

The *Scarabæus*, properly so called, of Horus Apollo, the unfolded wings of which formed rays, is also the same insect.

In both Aristotle and Aristophanes the sacred *Scarabæus* alluded to under the name of *Cantharis*, is *Ateuchus Ægyptiacus*.

Pliny's *Scarabæus cui sunt cornicula reflexa* is *Ateuchus Midas*, common in Egypt, and brought from thence to this country by Savigny.

The *Scarabæus* with two horns, consecrated to the moon, mentioned in Horus Apollo, is also *A. Midas*.

In Aristotle and other Greek writers the *Melolontha* children play with is *Cetonia fastuosa*.

Pliny's *Scarabæus viridis*, which engravers delight to contemplate, is also *C. fastuosa*.

The *Scarabæus Fullo albis guttis* of Pliny is the *C. aurata*, which has white marks on its elytra.

Since it is proved that the *Spondylus* of Aristotle and Pliny is the cockchaffer, that word necessarily belongs to our subject, as the cockchaffer is injurious to the leaves of the vine, as well as to every other kind of plant. There is a smaller species than the common sort belonging to the cockchaffer genus, which has been named by entomologists *Melolontha vitis*, because it is often found on the vine in company with *Melolontha*

Frischii, of which it is perhaps merely a variety:† but this insect is met with as frequently on the leaves of the willow and rose as on those of the vine; and it is not one of those considered particularly noxious by the cultivator; and for these reasons probably did not attract the notice of agriculturists in ancient times.

Before we pass on from the word *Spondylus*, I ought not to omit remarking that Fabricius has employed this word to designate a genus of *Coleoptera* which he has formed in the family *Prionidæ*, and named *Spondylis Buprestoides*; but this insect, whose larva inhabits the wood of trees, can have no connexion with the *Spondylus* of ancient authors, the larva of which attacks the roots of young or annual plants. It would seem that the intention of Fabricius in making choice of this name, was thereby to furnish an argument in support of his opinion that there was some relation between the insects: now what I have said at the commencement of these Researches, applies so exactly to the case in question as to render further comments unnecessary.

3. *Joulos*, or *Julus*.—*Centipede*.

The *Joulos* has even less claim than *Spondylus* to be included amongst insects hurtful to the vine, though Suidas has called it the worm of the vine; but this lexicographer, who lived in the middle ages, is the only writer who has so much mistaken the *Joulos* of the ancients. From a comparison of passages, it appears that the *Joulos* is an apterous or wingless insect, with a great number of legs; long, like a worm; has a sinuous mode of progression; rolls up when touched; and that it is found in moist places.

Modern naturalists have not made any mistake about this insect, and they have retained its ancient name. The name *Julus*, given to a genus of insects by the moderns, corresponds exactly with the *Julus* or *Joulos* of the ancients, especially if we consider its modern signification to be restricted to the genus *Julus* of Leach,^s in his excellent work on the *Myriapoda*, from which he has very properly separated *Polydesmus*, and some other genera.

† Walckenaer, *Faune Parisienne*, vol. i. p. 185; Oliv., *Entomologie genre Haneton*, No. 39, pl. 2, f. 12, *a*, *b*, *c*, p. 34, vol. i.; Schœn. *Synon. Insect.*, vol. i. pt. 3, p. 193.

^s Leach, *Zoological Miscellany*, 1817, 8vo. vol. iii. pp. 32—48.

The *Julos* of the ancients was probably the *Julus terrestris* and *J. sabulosus* of modern naturalists, and not the common centipede of M. Soavi.

These insects are found on the ground under stones; they eat the leaves and fruits which fall on the ground and decay there; but are not injurious to the vine or any living plant. As they are met with under the shade of the vine, as also in other shady and moist places, it has happened that injuries have been attributed to them which were owing to some other cause.

4. *Biurus*.—*Gryllo-talpa*.—*The Mole-cricket*.

Biurus, the next word for our consideration, has not much more to do with our subject than the words *Spondylus* and *Joulos*. It only occurs in a passage of Cicero quoted by Pliny, in which it is said that this animal eats the vines in Campania. Thus the *Biurus* is not alluded to as generally injurious to the vine, but only to the vines of Campania in particular, and there by reason of its great abundance. It seems probable, however, that this passage of Cicero, which Pliny only quotes incidentally, refers to a peculiar case; and that these *Biuri*, which were so noxious to the young plantations of vines in Campania, would not have been capable of injuring the roots of the vines when they had attained greater strength and hardness.

However that may be, the etymology of *Bi-uros*, which, as we have already remarked, implies an insect with two tails, leads us to refer the animal to which it was applied to the locust or the mole-cricket, the only insects to which this description is applicable; for, from their size and the injuries they occasion, these, and these only, are likely to be mentioned as ravaging a whole country planted with the vine.

But as the locust was well known to the Romans under the name of *Locusta*, and to the Greeks by that of *Acris*,¹ it would appear that the word *Biurus* could only be used for the mole-cricket; and this synonymy seems the more likely to be the right one, on account of its being the largest European insect (it is not less than 1½ inch in length), and from its singular shape and destructive habits; and that it is not recognised in any de-

¹ Vulgate, and Septuagint Bible. Aldrovandus de *Insectis*, p. 160.

scriptions of insects in ancient writers ; and finally, that in all the writings of ancient authors which remain to us, the only word which can be considered properly to apply to it is *Biurus*.

Latreille has said that the history of the mole-cricket commences with Mouffet. This is not correct. It is true that Mouffet was the first who published a good figure of this insect, and the first who gave it the name of mole-cricket, or rather that of *Gryllo-talpa*.^u He very properly rejects the previously assigned names *Spondylus* and *Buprestis* ; and this decidedly shows that the mole-cricket had, before his time, engaged the attention of naturalists. In fact, Aldrovandus had given a correct description of this insect, though his figure of it is a bad one, but yet easily to be known : he names it *Talpa Ferrantis*, because it had formerly been called the mole, and figured by Ferrante Imperato—" *Neapolitanus, diligentissimus aromatarius in naturali sua historia.*" Thus Mouffet borrowed half the name of this insect from Ferrante. He was acquainted with his work, for he copied his figure of the Tarantula from it. Ferrante's work was printed in Italian in 1599, after his death, and translated into Latin. The original edition^{*} is rare, and was not known, that I am aware of, to any naturalist of later times, from Linnæus downwards ; at least no one has ever quoted it. Many have thought they have done great things in going back as far as old Aldrovandus : now we have just shown that the history of the mole-cricket begins before him, before Mouffet, and even before Ferrante ; for if our application of the word *Biurus* be correct, (and we think it will be found so,) we must necessarily refer the first mention of this insect to very ancient times.

The mole-cricket is supposed to do much injury in Europe, particularly in the southern countries ; it makes subterranean galleries, tears and removes the roots of plants by means of its palmated fore-feet, in order to form a habitation for its young, and also in the pursuit of insects, multitudes of which, especially such as are injurious to agriculturists, it pursues and destroys : it never eats the roots or any other parts of vegetables.^v

^u Mouf. *Insect. Theat.*, c. xxiv. p. 104.

^{*} Ferrante Imperato, *del Historia Naturale*, libri 28. Naples, 1599, p. 787. *Talpa Insecto*. His figure is better than Aldrovand's.

^v *Acheta Gryllo-Talpa*, Fab., *Syst. Entom.*, vol. ii. p. 28, No. 1 ; Walckenaer, *Faun.*, Paris., vol. ii. p. 282.

The injuries caused by the mole-cricket have been confounded with those produced by the larva of the cockchaffer; for we find from a Dictionary of Agriculture, recently published,² the name *Courterolle* has been given to both insects in several cantons of France.

5. *Gaza*.—*The Saddled Locust*.—*Locusta ephippiger*.—*Wingless Locust*.—*Locusta aptera*.—*Pupa-like Locust*.—*Locusta puppa*.

It will be recollected that our examination of the word *Gaza*, as employed by the prophets Amos and Joel, served to show that their *Gaza* was an insect eminently destructive not only to the vine but to every kind of plant; and that its ravages were succeeded by those of several kinds of locusts, who completed the work of destruction, devouring every thing which this formidable insect had left. The Septuagint and the Vulgate translate *Gaza* by the word "caterpillar," and the Chaldean version by "crawling locust," that is to say, without wings, or apterous.

If we pay attention to the facts, that in Ptolemy's time the Jews of Egypt, to whom we are indebted for the Greek translation of the Bible, were only imperfectly acquainted with Hebrew, which was to them a dead language; that St. Jerome, whose translation was the basis of the Vulgate, in regard of the designation of material objects, had still less acquaintance with Hebrew, we shall see that the Chaldean version is here a higher authority than either of the others; and when we have consulted the works of Messieurs Rosenmüller and Œdmann,³ who have discussed this critical question with equal sagacity and learning, we shall be convinced, in spite of the contrary opinion of Michaelis and Bochart, that the four different words employed by Amos and Joel as names of insects, all designate locusts.

We consider that the observations of M. Shaw, a judicious traveller, set this matter completely at rest. He tells us that in Africa it frequently happens, that in March and April the locusts, driven by the south wind, darken the sky, and increasing

² Baron de Morogues, *Cours complet d'Agriculture*, 1834, 8vo. vol. vii. p. 349, on the word *Courterolle*.

³ Rosenmüller, *Handbuch der Biblische*, &c. Leipsik, 4^o band. 1831, 8vo. pp. 386 and 388; Œdmann *Vermischte Sammlungen*, &c. aus dem Schwedischen, Uebersetz von D. Groning, 1787, 12mo. 2^o heft. pp. 116 and 117.

till the middle of May, ravage every thing; and, after laying their eggs, they diminish in numbers. M. Shaw further informs us, that to these succeed, after an interval of several days, some smaller species, whose mode of progression is similar to that of the others, and that they are successively replaced by one or two other kinds which leave nothing unconsumed.

M. Œdmann, in order more completely to prove the correctness of the Chaldaic text, has thought it necessary to suppose that the *Gaza* was a locust which had not come to the perfect state, without either wings or elytra; that the Hebrews took it for a perfect insect, and designated it particularly by that name. But the oriental nations having from the most ancient times used the locust as an article of food, were much too well acquainted with them to make this mistake.

Nor is such a supposition at all required. We are acquainted at the present day with several species of locusts, which exactly agree with the account of the crawling locust of the Chaldean version, but with which it would appear M. Œdmann was wholly unacquainted: there is one species especially, the prothorax of which is considerably hollowed near the middle, and elevated posteriorly like a saddle; this prothorax conceals the arched sound-producing elytra, which are very short, and are not used as organs of flight: these locusts resemble pupæ, but have, nevertheless, arrived at the perfect state, and are capable of propagation: the species has been named *Locusta Ephippiger*. There are other species, the females of which have neither wings nor elytra, and are exactly like larvæ. *Locusta Apteræ* and *L. Puppa*, Fab., answer this description.

But I am inclined to think that the saddle-locust is more likely to be the *Gaza* of the Bible than either of the two other kinds just alluded to. Of all crawling locusts, *L. Ephippiger* is most frequently found on the vine. It is, however, never sufficiently abundant thereon to be injurious, and so cannot be ranged with vine-insects, properly so called; nor is it in this manner mentioned in the Scriptures.

6. *Cantharis of the Geoponicks*.—*Ninth Cantharide of Aldrovandus*.—*Rhynchites Bacchus*, or *R. Betuleti*; or *Attelabus of the Vine*.—*Becmar*.—*Diableau*.—*Lisette and Velours vert of Vine-dressers*.—*Coleoptera or Beetles which eat the Vine*, and

which cannot be referred to the *Cantharis* of the *Geoponicks*.—*Lethrus Cephalotes*.—*Grey Weevils*.

Ancient authors have given the name of *Cantharis* to certain insects which they used, after having pounded them, as an ingredient in an unguent or liniment, which was rubbed on the vines to preserve them from the attacks of insects: but it is only in the *Geoponicks* that, in speaking of this use of the *Cantharides*, it is said these insects are produced on or in the vine, and are injurious to it; and the author or authors of this compilation give also a receipt for macerating *Cantharides* in oil, to be used as a remedy against the injurious effects on the vine of these very insects.^b

We have seen that the word *Cantharis* was employed by the Greeks as well as by the Romans, to designate *Coleoptera*, or Beetles generally; that this word was often applied to Coleopterous insects of brilliant colours, or to those which possessed corrosive or blistering properties; and that it was frequently used for such insects as were remarkable from their injurious effects, whether of large or small size.

Among the first we have cited the *Mylabris*, which feeds on the endive, *Mylabris Cichorii* of modern entomologists, so well described by Dioscorides; and the *Lytta*, or *Meloë vesicatoria*, the *Cantharides* of the shops.^c

Among those of smaller size is the *Scarabæus parrus*, *Cantharis dictus* of Pliny, the *Curculio*, or *Calandra granaria* of modern entomologists; the *Curculio frumentarius*, Linn., the *Apion frumentarium* of Schoenherr and Latreille. This last is of a brightish red colour, the former of a dull yellow; and I consider it Pliny's insect, as it attacks wheat, while the other is chiefly injurious to the oat.^d

These indications leave us in a good deal of uncertainty respecting the *Cantharis* of the *Geoponicks*. However, as it must have been on account of their corrosive or vesicatory properties that the *Cantharides* were used by the ancients in the

^b Latreille in Cuvier's *Règne Anim.* vol. v. p. 63; Oliv. *Coleop.* iii. p. 47. pl. 1; Schœn. *Syn.* 1817, 8vo. p. 31; *Mylabris*, vol. i. pt. 3. p. 31; Oliv. *Ent.* iii. 47, 7, pl. i. fig. b, c.

^c Latreille, dans Cuvier, t. v. p. 67; Schœnherr, *Synonymia*, t. i. p. 20.

^d Schœnherr, *Synonymia Curculionidum*, t. i. p. 283, No. 75, Genus *Apion*; Walckenaer, *Faun. Paris.* t. i. p. 237, No. 15; Latreille *Gener. Crustaceor et Insect.* t. ii. p. 249 et 271; *ibid.* Cuvier, t. v. p. 88; Oliv. *Entom.* vol. v. 83, 16, 196.

liniment intended to destroy other insects, it would seem that the *Cantharides* of the vine were insects of that nature, or at least whose similarity of colour occasioned them to be confounded or compared with them. Now, since neither *Mylabris*, *Lytta*, *Meloë*, *Cantharis*, nor any Coleopterous insect possessing blistering properties lives on the vine, it is evident that the insect we are in search of must be looked for among those which from their colour would be likely to be compared to, or mistaken for, these insects; particularly with the *Mylabris* of the endive, with yellow stripes, or the *Cantharides* of the shops, which are of a brilliant green colour; for we know that the ancients made use of both these insects in medicine and agriculture.

We will now examine those *Coleoptera* or Beetles which are injurious to the vine; and the one which best fulfils these indications, will be the *Cantharis* of the vine mentioned in the *Geoponicks*.

The largest of these is *Lethrus cephalotes*, which gnaws off the young shoots of shrubs generally, and especially those of the vine, and carries them into its burrow.^e But this species seems peculiar to Hungary, where it is called *Schneider*, cutter; it is frequently met with also in the western parts of Russia; it is not known as a pest of the vine, by French or Italian cultivators. I do not find anything about this insect in ancient writers; if it was known to them, they included it amongst those which they designated by the general term, *Scarabæus*.

This is not the case with the Weevils, many species of which are injurious to the vine with us.

The one which I have most frequently found upon this plant, is the *Curculio Picipes*, Fab. probably the same as *C. Corruptor* of M. Host, and *C. Vastator* of Marsham.^f

These weevils eat the buds of the vine just as they are expanding. They are injurious to its fruitfulness, but they also attack pear and apple trees. They do more mischief in Germany and the south of Europe, than in this country.

^e Latreille, *Gener. Crust. et Ins.* t. ii. p. 95; *ibid.* Cuvier, t. iv. p. 542; Fischer, *Entom. de la Russie*, p. 133, xiii. 1; Kirby, *Introd. to Entom.* t. i. p. 204; *Ann. des Scienc. Natur.* t. i. p. 221.

^f Walckenaer, *Faun. Paris.*, t. ii. p. 249; Fabricius, *System Eleuth.* t. ii. p. 540, No. 201; Marsham, *Entomologia Britannica*, t. i. p. 300, No. 180.

A third species of beetle, still more destructive than the two of which we have just spoken, is the *Eumolpus vitis*, vulgarly known by the name of *Coupe-Bourgeon*; but this insect, of which we shall presently treat more at length, is, like the two preceding, of sober colours.

Amongst all the beetles which are injurious to the vine, there are, as we think, but two species which would be likely to have been confounded by the ancients, as indeed they were for a long time by the moderns, and which would appear by their colours to answer the indications afforded by an examination of ancient passages in reference to the word *Cantharis*. These two species are *Rhynchites Betuleti*, and *R. Bacchus* of modern entomologists, the *Attelabus vitis*, or *A. Bacchus*, and *Attelabus Betuleti* of their predecessors. These two species, considered as one kind by vine-dressers, have obtained from them in France, according to the various dialects or different provinces, or even in different cantons of the same province, the names—*Beemare*, *Urbee*, *Urbère*, or *Urbée*, *Diabteau*, *Bèche*, *Lisette*, *Velours vert*, *Destraue*, and probably others we have not heard of.

R. Betuleti^a is of a brilliant glossy green, or of a violet-blue colour equally glossy and brilliant. *R. Bacchus*^b is of a golden purple, or of a golden green mixed with purple.

These insects cut the stalks of the leaves, which causes them to wither and become pliable, and more easy to roll up: this they do with great skill, making a cavity in which they place their eggs, and by this means do a great injury to the plants which they attack. *R. Bacchus*ⁱ gives a preference to the leaves of the vine and cherry; *R. Betuleti*, to those of the white birch and vine. In the neighbourhood of Paris, I have found *R. Bacchus* most frequent on the vine; but it was *R. Betuleti* that did so much injury to the vines of Burgundy some fifteen years ago.

M. Silbermann of Strasburgh tells me, that *R. Betuleti* is the most injurious to the vines of Alsatia and the banks of the

^a Walckenaer, *Faun. Paris.* t. i. p. 235, *Attelabus betula*; Schœnherr, *Synonymia Insector*, t. i. p. 222; Panzer *Faun. Insect. Germ.* xx. No. 6.

^b Schœnherr, *Gener. et Species Curculionidum*, *Rhynchites Bacchus*, t. i. p. 219, No. 15; Latreille, *Hist. Nat. des Insect.* t. xi. p. 85, *Attelabus Bacchus*; Panzer, *Faun. Ins. Germ.* fasc. 20, No. 5; Charanson Cramoisi de Geoff. *Attelabe cuivre d'Olivier*.

ⁱ Kirby, *Introd. to Entomology*, t. i. p. 199.

Rhine; and that *R. Bacchus* is seldom found there, according to the observations of this clever entomologist. *R. Betuleti* first appears in the perfect state on the surface of the leaves of the vine in that country, towards the end of August. The larva rolls up the leaf in order to conceal itself, and attacks the young grapes, but not the buds, because these are out before it has left the egg.

Schranck, in his *Fauna Boïca*,^k has placed these two insects in a genus of his own construction, which he has named *Involulus*; but the ancient *Involvulus* being a Lepidopterous insect, does not belong to *Coleoptera* at all: and I may here remark, that this genus *Involvulus* of M. Schranck is not a well-formed genus, and that it has not been adopted by any other naturalist. Although it contains but few species, Schoenherr has separated several from it, referring them to three separate genera, *Apo-derus*, *Attelabus*, and *Rhynchites*.

Aldrovandus was perfectly well acquainted with *R. Bacchus*; and I am surprised that no naturalist has hitherto quoted this venerable father of natural history, in Europe, in reference to this diminutive but formidable insect. He places it amongst the *Cantharides*, to which he devotes a whole chapter, thus separating them from the *Scarabæi*, which occupy another chapter. This is his account of this weevil:—“*Nonus numerus significat convolvulum in Græcis, Tagliadezzo vulgo apud Italos agricolas, corpore caruleo, pedibus obscure lutescentibus, in vite repertum ac folia ejus depopulantem. Nascitur ex ovis bombycum ovis similibus magnitudine colore rubicundis. Hic cum parere vult multa cumulat, concolitque folia (unde forte a Latinis id nominis datum), at qui in his sua ora reponit.*”

Thus the name *Tagliadezzo*, cutter, given by the vine-dressers of Italy, its blue colour, the injuries it does to the leaves of the vine, which it rolls up and lays its eggs in, all contribute to prove the synonymy between our *Rhynchites Betuleti* or *R. Bacchus*, and the ninth *Cantharide* of Aldrovandus.^l But with respect to the identity of this insect with the *Ips* of the Greeks, and the *Convolvulus* of Roman authors, which Aldrovandus considers he has proved, we shall, in continuation, show that his opinion in this matter is erroneous.

^k Schranck, *Fauna Boïca*, t. i. p. 474, No. 498.

^l Aldrovand. *de Anim. Insect.* c. 4, 1638, in folio, p. 472.

4. *Ips*.—*Iks*.—*Volucra*.—*Volvox*.—*Eumolpus vitis*.—*Eumolpus of the Vine*.—*Coupe Bourgeons*.—*Tête-cache*.—*Bêche*.—*Lisette*.—*Gribouris de la Vigne*.

Aldrovandus, after having treated of the *Cantharides*, devotes a whole chapter to the *Ips* of the Greeks, his object in so doing being to support what he had advanced in the foregoing chapter, viz. that this insect is the *Tagliadezzo* of the Italian cultivators; but he remarks, that he has never found it upon the vine, although the ancients have said that it eats horn and the vine. Although Aldrovandus was mistaken in asserting that the *Ips* of the Greeks was the same insect as the *Convolvulus* of Roman authors, he was right in considering *Ips* to be a Coleopterous insect, and one of those which the Italian agriculturists included amongst the *Tagliadezzi*, or cutters.

We think, and are supported in this opinion by the authority of Vackenaer, Bochart, and other learned philologists, that the *Iks* of certain authors which is injurious to the vine is the same word as the *Ips* employed by other writers, to designate also an insect which eats the vine; and that between *Ips Ipses*, and *Iks Ikes*, there is only a difference of dialect.

This being the case, the critical examination we have just made warrants us in concluding, (from the consideration of passages in the writings of Grecian authors, including the grammarians and lexicographers of the lower ages,) that the word *Ips* is alike employed to designate an insect which eats horn and meat, and an insect which is injurious to the vine, eating the buds either in the state of larva, or after it has come to the perfect state. From these indications we learn, that the words *Ips* or *Iks* have been applied by ancients to two or three species of insects, or to the larvæ of different insects.

There must certainly be some analogy between these species, or the ancients could not have confounded them, and designated them by the same name. Now there is only one genus of Coleoptera the larva of which has *trophæ* or organs of manducation sufficiently strong to pierce horn. The *Ips* of Homer and of St. Chrysostom is therefore a Coleopterous insect; and, consequently, the *Ips of meat* and the *Ips of the vine* must also belong to the class *Coleoptera*.

As the insect in question eats horn and meat, naturalists will be aware that it belongs to the large tribe *Dermestes*, of

Linnæus, the larvæ of which do so much mischief in their museums. They are well aware also, that these insects are met with in fur-warehouses, in pantries and larders, and, indeed, in every place where animal substances are kept; in short, that nothing is too hard or too soft for them. But we are still too little acquainted with the history of these insects, to be able to determine to what genus of modern entomology the *Dermestides* belong which eat horn, and particularly the horns of the wild-goat (*Capra Ægagra*), the material of which the bow of Ulysses was made, and which is especially mentioned by Homer. We are perfectly well acquainted with the metamorphosis of *Dermestes lardarius* and *Dermestes Pellio*, the fur and bacon beetles.

These insects belong to the large family *Nitidulaires* of Latreille.^m Degeerⁿ long since had judiciously separated a genus from *Dermestes*, to which he gave the name *Ips*; but this name has since been given to very different genera still separated from the extensive family of *Dermestes*.

It is very possible, (as the ancient grammarian quoted by M. Boissonade has observed,) that the larva of the same insect should eat horn and meat; it is even probable that the ancients might have confounded the larvæ of two different though nearly allied genera; but most certainly the insect described by ancient writers as eating horn or meat, could not have been the same as the one the grub or larva of which feeds on the buds of the vine. As the same name was applied to them, they must both have belonged to the class *Coleoptera*, the larvæ of which could not be confounded with caterpillars, or the larvæ of *Lepidoptera*. The perfect insect also which eats the buds of the vine, must have resembled a *Dermestes* in shape and size; all these conditions are fulfilled in the *Eumolpus* of the vine,—*Eumolpus vitis* of modern entomologists,—which is one of the greatest pests of the vine. This insect, which is of a black and red colour, belongs to a recently constructed genus,^o and is vulgarly known by the names *Gribouris de la Vigne*,

^m Latreille, *dans le Tableau du Règne Animal de Cuvier*, t. iv. p. 503; Schœnherr, *Synonymia Insect.* t. i. pt. 2, p. 236, No. 25; Walckenaer, *Faun. Paris.* t. i. p. 124, No. 2; Panzer, *Faun. Insect. Germ.* t. lxxxix. 12; Fabricius, *Syst. Eleuth.* t. i. p. 422.

ⁿ Degeer, *Memoire pour servir à l'Histoire des Insectes*, t. v. p. 190.

^o Buchoz, *Hist. Nat. des Ins. nuisibles à l'Homme*, 1782, in 12, p. 158 d 163.

Bêche, Lisette and *Tête-cache*, because its head is concealed by the prothorax. It feeds on the buds and young shoots of the vine, which it cuts in two, and thus destroys; it also eats the grapes.

The great injury which this insect does to the vine is another reason for our considering it the *Ips* of the ancients. We readily conceive, as Strabo observes, that the pretended destruction of this scourge by Hercules should, in a country where the vine is much cultivated, have caused the memory of that hero to be held in greater veneration than his victory over the Nemean lion. The larva of the *Eumolpus* of the vine is the one which the ancients alluded to when they spoke of the *Ips* or the *Iks* as a grub which appears in the Spring: this larva is of an oval form; it has six legs; its head is scaly, and armed with two small jaws.^p

The same insect which the Greeks called *Ips* or *Iks*, was named *Volucra* and *Volvoæ* by the Romans, but with this difference, that the words *Ips* and *Iks*, designated the larva of the insect, and the words *Volucra* and *Volvoæ*, the perfect insect; this is shown by the word *animal*, and not *worm*, being used by Pliny and Columella in speaking of the *Volucra* and *Volvoæ*, whilst the *Ips* of the Greeks is always designated as a worm. The name *Volucra* was probably given to this larva on account of the celerity with which it escapes from the hand that attempts to take it; it drops on the ground directly the leaf in which it is enveloped is touched; and the name *Volvoæ* was doubtless given, from the habit the insect has of wrapping itself up in leaves. Forcellini gives in his Italian dictionary for the word *Volucra*, the word *Ritorelli*. This vulgar appellation of the vine insect in Italy is evidently derived from the same origin as *Volvoæ*. Almost all the insects of the genus *Dermestes* counterfeit death on being touched; and this similarity of habit has occasioned the ancients to confound the *Ips* which eats horn, and the *Ips* which devours the vine, together.

But there are still stronger reasons than these to prove that the *Volucra* or *Volvoæ* of the Romans is the same insect as the *Ips* or *Iks* of the Greeks.

^p Latreille, *Nouv. Dict. d'Hist. Nat.* t. x. p. 358. He quotes Olivier, No. 96, pl. 1, fig. 1; but Olivier's figure certainly does not represent the insect which infests the vine: it is *Eumolpus Ignitus*, a Brazilian species, totally different from the one in question.

We learn from Pliny and Columella that the *Volucra* or *Volvox* was a different insect from the one which they named *Convolvulus*.

The difference between two insects which are both injurious to the vine must have been considerable, or it would not have been noticed by the ancients, whose knowledge of these animals was extremely limited.

We shall presently show that the *Convolvulus* was a Lepidopterous insect, or a butterfly: the *Volucra* or *Volvox* belongs to a different class. But we see that it is only the larvæ or perfect insects of the class *Coleoptera*, and caterpillars or the larvæ of *Lepidoptera*, which are very injurious to the vine. The *Volucra* or *Volvox*, therefore, belongs to the class *Coleoptera*.

Further, we know from the information Pliny and Columella have afforded us on this subject, that the *Volucra* or *Volvox* eat at the same time the young shoots of the vine and the grapes. Pliny says, "*Volvocem animal prærodens pubescentes uvas*;" and Columella observes, "*Genus animalis Volucra prærodit teneras adhuc pampinas et uvas*." These expressions exactly and only apply to the *Eumolpus* of the vine, the *Ips* of the Greeks, and not at all to the *Cantharides* of the Geoponicks, or to *Rhynchites Bacchus*, or *Betuleti*, which injures the vine, by rolling up the leaves and causing them to wither, but does not attack the fruit. Nor does it apply, as we shall hereafter see, to any of the various caterpillars or larvæ of *Lepidoptera* which feed on the vine.

We have now shown that the *Ips* or *Iks* of the Greeks is the same as the *Volucra* or *Volvox* of Roman authors, the *Eumolpus* of the vine (*Eumolpus Vitis*).

8. *Involvulus*.—*Convolvulus*.—*Pyralis Danticana*.—*Ver-coquin*.—*Procris Vitis*, or *Procris Ampelophaga*.—*Teigne de la Vigne*.—*Teigne du Raisin*.—*Tortrix Hyperana*.—*Cochylis Roserana*.

We learn from the recipes given by Pliny and Cato to prevent the increase of the *Convolvulus*, that it was an insect highly injurious to the vine; but as these writers give no description of the insect, and only afford us information on one particular respecting it, viz., that it was a different kind from *Volucra* or *Volvox*, we have no means of knowing whether this word was

employed to designate the same insect as the *Incolubus* of Plautus.^q In this perplexity, the similarity of the words and their derivations, which indicate the same habits and economy, will not allow of their separation, and should satisfy us that they were used to designate one and the same insect; or rather that it is the same name with the addition of two different particles which do not alter its meaning. No insects except the caterpillars or larvæ of Lepidoptera have an economy similar to that attributed by Plautus to the *Incolubus*: “*Bestiola quæ in Pampini folio intorta implicat se.*”

The caterpillar not only rolls up the leaf of the plant in which it wraps itself up, like the larva of the *Eumolpus Vitis*, or *Coupe-bourgeon*, but it fastens itself therein, and, by means of silken threads spun from its body, constructs a cocoon wherein to undergo its metamorphosis; it infolds itself, *implicat se*. We know a whole family of Lepidoptera who have this habit of rolling themselves up in the leaves of plants.

In order, therefore, to find the *Incolubus* or *Convolvulus* of the ancients, we must look amongst those species in the numerous family *Tortricites*, the caterpillars whereof attack the vine.

According to Bosc, the cultivators of the south of France designate a Lepidopterous insect, which is but little known in the neighbourhood of Paris, by the name of *Teigne de la Vigne*. The caterpillar of this moth attacks the grapes when they are about half grown, travelling from grape to grape by a gallery of its own construction.^r

Another species, the *Teigne du Raisin*,^s also eats the grapes, beginning at the same time as the other, but it seldom attacks more than one grape at a time: it was this insect which committed such great devastation in the vineyards in the neighbourhood of Constance.

A species resembling this, or the preceding, two or three individuals of which are sufficient entirely to destroy a vine, was seen by Pallas, in the Crimea.^t This appears to be the caterpillar of a *Procris*, or *Zygana* (a genus separated from *Sphinxæ*),

^q See the former part of these *Researches*, p. 141 of this volume.

^r Bosc. *Notice sur la Pyrale et autres insectes, qui nuisent aux Vignobles*. *Esprit des Journaux*, p. 132, et *Bulletin de la Société d'Encouragement*.

^s Kirby, *Introduction to Entomology*, vol. i. p. 205.

^t Pallas, *Travels in Russia*, t. ii. p. 241.

and is very similar to *Zygæna Statices*, "the forester:" it is found on the dock and sorrel in the neighbourhood of Paris.^u

The *Pyralis Fasciana** of Fabricius, whose fore-wings are of a dull ash colour, with a brown fascia, and dots of the same colour, has been mentioned as also injurious to the vine, or as corresponding with one of the beforementioned species.

There is yet another insect possibly referrible to the *Teigne de la Vigne*, or *Teigne du Raisin*, of our cultivators: it is *Tinea Ambiguella*, Hubn.^y

In order to ascertain the correct synonymy of the various species of *Lepidoptera* especially injurious to the vine, mentioned under various names in the writings of naturalists, travellers, and agriculturists, I have had recourse to the practised skill and judicious criticism of one of the first Lepidopterists in Europe, M. Duponchel.

From the results of our united and careful examination it would appear, that with the exception of those *Lepidoptera* occasionally met with on the vine, and also on other plants, without producing much injurious effect, (and of these we shall speak hereafter,) all the *Lepidoptera* which can be considered especially injurious to the vine are reduced to the following four species, the caterpillars of each of these rolling themselves up in the leaves; and the ancient names *Involuculus* and *Convolvulus*, therefore, applying to them in common, we can hardly suppose that the observations made by the ancients on this subject were sufficiently exact to enable them to determine the differences between insects, a knowledge whereof, notwithstanding the great labour of late bestowed on them, has been but recently attained by modern naturalists.

The first of these species is the one which was observed by Bosc, and named by him *Pyralis Vitis*. Fabricius has described this insect from the specimen in Bosc's collection, under the

^u Walckenaer, *Faun. Paris.*, t. ii. p. 284, No. 2; Fabricius, *Entom. Syst.*, t. iii. pt. i. p. 406, No. 8; Godart, *Hist. des Lépidoptères de France*, t. iii. p. 158, pl. 22; *Dict. Classique d'Hist. Nat.*, t. xiv. p. 289, article *Procris*.

* Fabricius, *Entom. Syst.* t. iii. pt. i. p. 261, No. 78; Fabricius, la Rapporte à la *Tortrix Heparana* du Catalogue de Vienne. It is not the *Fasciana* of Linné. Consult Friedrich Treitschke; *Die Smetterlinge, von Europa*, t. viii. p. 28.

^y Hubner, tab. 22, fig. 153, sect. 64, No. 61, du texte; Treitschke, *Die Schmetterlinge von Europa*, t. viii. pp. 280 et 281, No. 8; *Cochylis Roserana alis anticis argente ochroleucis, nitidis, fascia media intus unguistiore fusca*.

name of *Pyralis Vitana*. For certain reasons, which I shall presently adduce, neither of these names can be retained: in order to avoid all confusion we have named this insect *Pyralis Danticana*, after Bosc's second name—Dantic; as we could not make use of Bosc, his first name, Fabricius having already appropriated it in his *Pyralis Boscana*.

The second species is the *Procris Ampelophaga* of Duponchel, Bayle, and Passerini, named *P. vitis* by Boisduval.

The third is the *Tortrix Roserana* of Frolich, or the *Cochylis Roserana* of Duponchel and Treitschke, *Tinea Ambiguella* Hubn.

The fourth is the *Tortrix Heperana* of Treitschke and Duponchel, or *Pyralis Fasciana*, Fab.

The caterpillar of *Cochylis Roserana*, which has been mentioned by Frolich as committing great devastation in the vineyards in the neighbourhood of Stuttgard, has not been described by him, nor, as I believe, by any other entomologist.

There is then *Pyralis Danticana*,² the *Ampelophaga*³ of Boyle and Passerini, and *Fasciana*, respecting the destructive effects on the vine of which, there can be no doubt. Except on the caterpillars of two species, we have no observations sufficiently exact to enable us to determine the species.

The caterpillar of the first of these,^b *P. Danticana*, is, according to Bosc, comprehended, in the neighbourhood of Paris, in the collective term *Larvæ*, or *grubs hurtful to the vines*; in Burgundy, and the vine countries, it is called *Vercoquin*, an epithet sometimes applied to the larva of the cock-chaffer (the *Spondylus* of Pliny).

This caterpillar is, a short time after it leaves the egg, about a third of an inch in length; its head is black, body green; it has a yellow spot on each side of the neck.

It is first seen in the month of May, towards the end; the

² *Pyralis Vitana*, alis fusco virescentibus: fasciis tribus obliquis fuscis marginalis: Bosc. Dantic. *Mém. de la Société d'Agricult.* 1786, trimestre d'été, p. 22. pl. 4. fig. 6; *Pyralis Vitis*, Fabricius, *Entom. Syst.* t. iii. p. 2, pl. 249; A. J. Coquebert, *Illust. Iconographica specierum Insect. quæ in Musæis Parisinis observavit*, J. C. Fabricius, duas 1, tab. 7, fig. 9.

³ *Procris Ampelophaga*, C. Passerini, *Memoria sopra duo specie d'insetti nocivi; Zigena Ampelophaga*, Bayle-Barelle, *Degli insetti nocivi al nomo alle bestie, al agricoltore*; Miland 1824, pl. 1. fig. 7. à 12.

^b Bosc. *Nouv. Dict. d'Hist. Nat.* t. xxxv. p. 392.

time it effects the greatest injury is about the middle of June. It eats the leaf-stalks half through; this causes the leaves to wither and to roll up readily. When one leaf dries up, the insect goes to another. One caterpillar destroys a good many leaves; the vine is weakened, and the grapes prevented from acquiring their full size and sweetness. This caterpillar does not attack the grape, but eats the grape-stalk, so that even if it does not dry up, the fruit is small and without flavour. After most of the leaves are affected, the grapes cannot long escape, because they are thickest towards the bottom of the plant, and it is there these caterpillars commence the work of destruction.

The moth produced from this caterpillar is about the size of the nail of the little finger. Its wings are of a yellowish green, with three oblique brown bands.

These moths are most abundant in July. During the day they are to be found on the vine, sitting under the leaves; they are easily disturbed, and fly off on the least alarm. It is in the dusk of the evening that the male seeks his mate; those who leave their retreats earlier, quickly become the prey of swallows and other insectivorous birds.

I have before said that Bosc referred the moth he named *Pyralis Vitis* to a new species which Fabricius named *P. Vitana*. I have also said it was described in Paris by Fabricius, from Bosc's specimen. M. Coquebert has published four plates of insects drawn and coloured from individuals observed and described by the Danish naturalist; and amongst these is *P. Vitana*.

Thus it would seem the insect was well known; but this was not the case.

M. Duponchel has not found Fabricius and Bosc's descriptions, or the figure of Coquebert, sufficiently exact for the determination of the species.

The German authors, Frolich, Treitschke, and others, who have paid great attention to this tribe of moths, would appear to think with M. Duponchel on this subject, as they have not mentioned *P. Vitana*, Fab. in any of their voluminous works.

In this difficulty M. Duponchel has had recourse to Bosc's collection, which now forms a part of our museum. He finds a *Pyralis* there with the name *Vitana* attached, described by the

German authors under the name *Pillerana*, and said by them to live on *Stachys Germanica*, a plant so different from the vine that the insect was hardly likely to feed on both.

But more than this, Fabricius has given a description of *P. Pillerana*, different from that he has given to *Vitana*.

M. Duponchel has compared the description given by Bosc of the larva of *P. Vitana*, with the descriptions of all the caterpillars of *Pyralide* mentioned by writers who have treated of these insects.

However I maintain, and I remarked to M. Duponchel, that even supposing M. Bosc to be mistaken about the moth, he could not respecting the existence of the caterpillar, nor could he be deceived in the very curious observations he has made on its economy; that two years ago, when I was on the banks of the Rhine at Baubach, in Nassau, I had noticed a cultivator (he was the innkeeper of the place,) very busy picking the leaves which were rolled up from his vines, and he told me it was to destroy a very injurious insect. I opened several; they contained little caterpillars; and I immediately recognised the caterpillar described by Bosc. I expressed my surprise to M. Duponchel, that after so much progress had been made in this department of entomology, by the discoveries therein of many German and French naturalists, a moth should not be known which had been twice figured and described; and which, since the caterpillar was so abundant, must be common. To this M. Duponchel replied, that he considered I was mistaken in my belief of having recognised the caterpillar described by Bosc, as the description which this naturalist gives in his Memoir is so general, that it would apply to all the caterpillars of this genus which have green bodies and a black head, but which differ in other characters to which Bosc does not allude, such, for example, as the colour of the warty protuberances, a character which all the caterpillars of this group possess.

Although the silence of the Italian naturalists respecting this caterpillar does not prove that it is not to be found in Italy, and that therefore it could not have received from the ancients the name *Involvulus*, information may perhaps be obtained on this point by attention to the fact of there being another to which the names *Involvulus* and *Convolvulus* would more correctly and particularly apply: it has been more accurately observed than the caterpillar of Bosc, and its moth, *Procris*

Ampelophaga, is perfectly well known, and very much dreaded by all the Tuscan cultivators.

Some years this insect does much mischief to the buds and young shoots of the vine. It has sometimes devastated half the vineyards of Piedmont. It is five or six lines in length; its colour is greyish brown; the hairs are in tufts, disposed in four rows. Underneath it is smooth and of a yellowish white: it attains its full size towards the end of May; it is at this time that it eats the leaves of the vine. It is always found on the upper side of the leaves. When a branch is shook, the caterpillar bends its body in the form of an arc, and lets itself fall to the ground. The largest number of these caterpillars I have ever seen on one vine, is ten; but there are not generally nearly so many.

Some time between the 20th and 30th of May, this caterpillar spins a white cocoon, wherein it remains motionless, and afterwards changes to a chrysalis about the 5th or 10th of June.

The chrysalis is at first of a yellow colour, with black dots on each segment; but as the time of transformation approaches its colour becomes deeper, and changes to a dirty blue.

The transformation of the chrysalides to moths, generally takes place from the 19th to the 25th of June.

The moth which comes from this caterpillar is the *Procris Vitis* or *P. Ampelophaga* of modern entomologists; its wings are of a blackish colour, changing to dull green. Body, bluish green.

Musca brevis frequently introduces its eggs into the body of the chrysalis of this moth. The larva of the fly feeds on the substance of the chrysalis, without altering the appearance of its external covering, and it seems to be transformed into a fly instead of producing a moth.

Each female of this *Procris* lays about three hundred eggs, which are of a straw-colour, and so small that they are hardly to be seen with the naked eye. About the 3d of July these eggs produce little white transparent caterpillars, covered with very minute hairs. The caterpillars of this second brood undergo transformation towards the 26th of August.

I have myself in part verified Bosc's observations on the caterpillar of *Pyralis Danticana*. I am only acquainted with

the habits of *Procris Ampelophaga* through the Memoir of Passerini. But if the first species is as abundant in Italy as the second, I shall be inclined to consider that it is the one to which the ancients more particularly applied the names *Incolcolus*, *Incolculus*, *Involcus*, and *Concolculus*.

9. *Kampe*. — *Eruca*. — Caterpillars of *Sphinx Elpenor*, or *Sphinx of the Vine*,—of *Bombyx Purpurea*, or *Ecaille Moucheté*,—of *Sphinx Porcellus*, or the *Sphinx with red bands*.

The other caterpillars which are found on the vine, and are occasionally injurious to it as well as to all other plants, do not belong to either the tribes *Tortrices* or *Pyrallides*, nor to the genus *Procris*.

Those which I have most frequently met with on the vine, are the caterpillars of *Bombyx Purpurea*, Fab., *Arctia Purpurea* of modern entomologists, the *Ecaille Moucheté* of Geoffroy, which lives also on the broom and elm and twenty other kinds of plants.^c

The *Sphinx Elpenor*, or the Sphinx of the Vine, (not the *Sphinx Vitis* of modern entomologists, which is an American insect that does not feed upon the vine,) is pretty often found on the vine, but is as frequently met with on the *Epilobium*, *Salicaria*, balsam and bindweed.^d

Lastly, *Sphinx Porcellus* or Red-banded Sphinx, the caterpillar of which occurs occasionally on the vine, but still oftener on the honeysuckle and lavender, and especially on *Galium verum*.^e

The caterpillars of the two last kinds are of the size of the little finger; and as they frequent the buds, are readily seen and destroyed.

These are the caterpillars of Lepidoptera, which the Greeks and Romans, in speaking of the insects injurious to the vine, designated by the general names *Kampe* and *Eruca*. But they

^c *Arctia Purpurea*, Fabr. *Entom. Syst.* t. iii. 1^{re} part. p. 466, No. 185; Walckenaer, *Faun. Paris*, t. ii. p. 291; Godart. *Papillons Nocturnes*, t. i. p. 339, No. 105.

^d *Sphinx Elpenor*, Fabr. *Ent. Syst.* t. iii. p. 372, No. 51; Walckenaer, *Faun. Paris*, t. ii. p. 276, No. 6; Godart *Crepusculaires*, p. 46.

^e *Sphinx Porcellus*, Fabr. *Ent. Syst.* t. iii. p. 373; Walckenaer, *Faun. Paris*, t. ii. p. 279; Godart *Crepusculaires*, p. 51; Duponchel, *Iconographie des Chenilles*, Tribu des Spingides, pl. 5, fig. 1, a, b.

did not confound them with worms, and were aware of their undergoing metamorphosis.

10. *Phteiras*.—*Tholea* or *Tholaath*.—*Coccus Vitis*.—*Kermes* of the Vine.—*Coccus Adonidum*.—*Coccus* of the Hothouse.

The *Phteiras*, or Lice of the Vine, mentioned by Ctesias as insects which cause the vine to die, and which the Geoponicks include with caterpillars amongst the greatest enemies of this plant, cannot, we consider, correspond with the *Coccus Vitis*, or *Kermes* of the Vine.^f

We know that the *Coccus* or *Gallinsectæ* are, with the *Aphides* or *Pucerons*, the insects which, on account of their diminutive size, or powers of rapid increase, most resemble the louse; and also from the circumstance of their females being without wings. The *Cocci* sometimes collect on, and cover the bark of trees, in such a way as to give it a scurfy appearance. When the females of these insects have laid their eggs, their body dries up, and becomes a solid crust, which covers the eggs, and which has no small resemblance to an immense nit.

These insects injure the vine by piercing the wood with their long rostrum, which is of a sheath-like form. It is with this instrument that they suck the sap and cause it to flow.

Our cultivators are but little annoyed by these insects, and do not appear to be much acquainted with them, because the yearly pruning which they give the vines is unfavourable to their increase, as the *Coccus* can only feed on the young wood whilst the bark is tender. They are at times, however, very abundant on those vines which are left to themselves; and in the countries where the vine is only cultivated in hothouses they multiply to a great extent, whilst the other insect pests of the vine are unknown.^g But in the hothouse the *Coccus* that attacks the vine is a different species to the one which is injurious to it out of doors. The *Coccus* of the hothouse vine is *C. Adonidum*^h and not *C. Vitis*; if this insect originally

^f Ctesias, *Indicorum*, cap. 21, p. 253, édit. Boeher. Francofurti, 1824, in 8vo. Ctesias speaks of a red insect which in India destroys the Amber-bearing trees in the same manner that the *Phteiras* destroys the Vine. Larcher in his translation of Herodotus has not rendered this passage correctly.

^g Major, *a Treatise on the Insects most prevalent on fruit trees and garden produce*, 1829. in 8vo. p. 112.

^h *Coccus Adonidum*, Fabr. *Syst. rhyngstor.* p. 307, No. 4; J. Major, *a Treatise*

came, as is alleged, from Senegal, it is not amongst the number of those designated by the ancients; who indeed could hardly have distinguished the different species of *Coccus*, since, although M. Fonscolombe's beautiful work on these insects had appeared, it required all the assistance that the most practised eye, with the help of glasses of high magnifying power, could give, to enable a modern entomologist to ascertain the distinction.

M. Fonscolombe has well remarked that no good limits have been drawn between the Kermes and the Cochineal insects, between the *Gallinsecta* and the *Progallinsecta* of Reaumur. This accomplished naturalist has therefore adopted the plan of making only one genus of *Coccus* and *Chermes*; but he subdivides this genus into many sections, and the *Coccus* of the vine¹ belongs to the section composed of species having the body naked, without any trace of rings or limbs at the period of laying the egg, during which time they remain on the nest, which looks as if it were made of cotton.

The *Coccus Adonidum*, or Hothouse Kermes, is also remarkable for the white cottony substance it exudes, which gives it the appearance of being covered with flour.

The word *Phtaire*, given to one of the *Gallinsecta* by the author of the *Geoponicks*, is connected with the interpretation of the word *Thola*, *Tholea* or *Tholaath* in the Bible; which subject claimed our attention at the commencement of these Researches.

It will be remembered that the result of our long discussion respecting it was, that *Thola* was employed in the Bible not only to signify a worm, vermin, an insect, or the larva of an insect, or an animal vile and contemptible, but also an insect, or the larva of an insect, which ate the vine, and another plant of whose name we are ignorant, but which was of some size, since it was capable of affording considerable shade: indications so vague would scarcely enable us to form a probable conjecture concerning it, if the word, which only occurs in the Bible, had not been several times used there joined to the

on the Insects most prevalent on fruit trees and garden produce, 1829, in 8vo. p. 144, the Mealy Bug.

¹ *Coccus Vitis*, Boyer de Fonscolombe, *Ann. de la Société Entomologique*, t. iii. p. 214, No. 14; Reaumur, *Mem. Insect.* t. iv. p. 62, pl. 6. fig. 1 à 7; Fabr. *Syst. rhynotor*, 1803, in 8vo. p. 310, No. 4. *Coccus vitis vinifera*.

word *Dibaphi*,^k to designate an insect which the Arabs call *Kermes*, and which gives out, when treated with vinegar, a red colour, in a word—the cochineal. The species which produce this colour, in Europe, are *Coccus Ilicis*, which feeds on the *Ilex* or Holm-oak,^l and this therefore may be the insect mentioned in the Bible as destroying a tree affording shade: and *Coccus Polonicus*,^m which adheres to the roots of *Scleranthus annuus* and other plants.

The *Coccus* of the vine does not produce this colour; but the similarity of these insects, and their generic affinities, it would appear, has caused them to be confounded with the other *Cocci* or the *Tholaath Dibaphi*, or at least occasioned their being included under one and the same denomination: just as we say—much more incorrectly—the worm of the apple, and the worm of the nut, although these are the larvæ of insects of very different genera. In the same way the word *Thola* or *Tholaath* was used in the Bible for vermin, louse, little insect, insignificant, vile, and contemptible, as *Phiteire*; but the epithet *Dibaphi* employed to designate the *Kermes* or insect used in dyeing, which was sometimes added to the word *Thola* or *Tholaath*, sufficiently indicates the similarity of the species, the kind of insect or vermin designated by the word which was so injurious to the vine and some other plants.

11. *On the means used in destroying the Insects injurious to the Vine.*

From the recipes given by Pliny and Columella to protect the vines from the insects which attacked them, it would appear that the *Coccus* was much more injurious to the vine in ancient times than it is at present. These recipes consisted in rubbing the stalks and branches with unctuous substances, such as oil or the fat of bears; substances possessing blistering properties were also sometimes used for the same purpose.

Our modern cultivators prevent the injuries of the *Coccus* by the annual pruning to which I have already alluded.

^k Bochart, *Hieron.* p. 22.

^l *Coccus Ilicis*, Fabr. *Syst. rhynotor.* p. 308; Reaumur, *Insect.* IV. tab. 5; Garidel *Plantes des Environs d'Aix*, p. 250. pl. 35; Boyer de Fonscolombe, *Ann. de la Société Entomologique*, t. iii. p. 210.

^m *Coccus Polonicus*, Fabr. *Syst. rhynotor.* p. 310, No. 26; Frisch. *Insect.* 56; Walckenaer, *Faun. Paris.* t. ii. p. 363.

To destroy the *Becmares*, the *Coupe-bourgeons*, the *Rhynchites Bacchus* and *Betuleti* and *Eumolpus Vitis*, it is necessary to use other means.

The best plan seems to be—taking care to choose a time for the operation when the insects undergo transformation and the sexes unite—to place under each vine a kind of basket, made for the purpose, of a somewhat circular form, in such a way that it will go all round the bottom of the vine, and then to shake the branches; this will cause all the insects to fall into it. It has been proposed by some to substitute for the basket a capacious tin funnel, with a bag attached to the smaller end, for the insects to drop into.

The same method may be advantageously employed against the caterpillars of the moths which injure the vine, especially when they have attained a considerable size; though, indeed, by that time they have well nigh completed the work of devastation, the leaves being half eaten and completely withered; yet by destroying them in this state some check is given to their increase in future years.

In connexion with this, another plan may be mentioned, which is particularly adapted for the destruction of the *Pyralis* of the vine, and the *Procris Ampelophaga* of Passerini, and generally to that of all the small moths which attack the vine: it is to make fires at night-fall, in the opposite direction to the wind; when the insects come in crowds to the flame, and are destroyed. These fires should be kept up for ten or twelve nights running, except when there is much wind or rain, as, besides other objections, in such weather the moths will not fly, but remain on the leaves.

The most efficacious way of destroying all the various kinds of Lepidopterous and Coleopterous larvæ that infest the vine, is to pick off the curled-up leaves in which the eggs have been deposited, and to throw the leaves into an oven and burn them. This method necessarily occupies a good deal of time, and is much the most expensive, but it is also, after all, the most certain;—I have seen it practised with much care and patience in Nassau, amongst the cultivators on the banks of the Rhine.

SECTION III.

SYNONYMY OF ALL THE SPECIES OF INSECTS WHICH HAVE
BEEN MENTIONED IN THESE RESEARCHES.

In this section we shall give a synonymy of all those insects of which we have had occasion to treat; and thus present a summary of great importance as regards the object of these Researches. In this it will best answer our purpose to adopt a different order to that observed in the preceding section: that is to say, we shall give a synonymy of the insects most hurtful to the vineyards *first*, then passing on to such as are only occasionally injurious, finish with those which have been erroneously alluded to by the ancients as enemies to the vine; taking care, however, to subject each of these three divisions to that classification which is most generally adopted by modern naturalists. Finally, we shall give, in the same way, a list of those insects which are not injurious to the vine, but the synonymy of which has been determined in these Researches.

I.

Synonymy of the Insects most hurtful to the Vine.

COLEOPTERA.

1.

Ancient Names.

Greek.—*Ips* (*Vitis*). *Iks*.

Names of Modern Naturalists.

Eumolpus Vitis (the larva).

Common Names.

French.—*Gribouris de la Vigne* (the larva). *Coupe-Bourgeon*.
Ebourgeonneur. *Couturières*. *Ver de la Vigne*.

2.

Ancient Name.

Latin.—*VOLUCRA*.

Names of Modern Naturalists.

Eumolpus Vitis (the perfect insect). *Eumolpe de la Vigne*.

Common Names.

Gribouris de la Vigne (perfect insect). Coupe-Bourgeon, &c.

3.

Ancient Name.

Latin.—VOLVOX.

Names of Modern Naturalists.

1. Rhynchites Bacchus (larva). 2. Attalebus Betuleti (larva)
Attelabe de la Vigne. Charanson de la Vigne.

Common Names.

French.—Urbie. Béche. Lisette. Diablaux. Destreaux.

Italian.—Tagliadizzo.

4.

Ancient Names.

Greek.—KANTHARIS.

Names of Modern Naturalists, Latin and French.

1. Rhynchites Bacchus (the perfect insect).
2. Rhynchites Betuleti (perfect insect).
Charanson de la Vigne. Attelabe de la Vigne.

Common Names.

Becmare. Velours vert.

5.

Ancient Names.

Greek.—KANTHARIS. MELOLONTHA.

Latin.—SCARABÆUS.

Names of Modern Naturalists.

Lethrus Cephalotes.

Common Names.

German.—Sneider (the Cutter).

ORTHOPTERA.

1.

*Ancient Name.**Hebrew.*—GAZA.*Names of Modern Naturalists.*

1. Locusta Ehippiger (Sauterelle à selle ou à cymbole).
2. Locusta Aptera (Sauterelle aptère).
3. Locusta Puppa (Sauterelle-Nymphe).

HEMIPTERA.

1.

Ancient Names.

Hebrew.—THOLA, THOHA, or THOLAATH.
THOLAATH DIBAPHI.

Greek.—PHTEIRE.*Names of Modern Naturalists.*

1. Coccus Vitis, . . Cochenille de la Vigne.
 —— Adoninum, ——— des terres.
 —— Illicis, . ——— du Chêne vert.
 —— Polonicus, ——— de la Scleranthé.

*Common Names.**English.*—Mealy-bug.

LEPIDOPTERA.

1.

Ancient Names.

Latin.—INVOLVULUS, or INVOLVOLUS. INVOLVUS.
CONVOLVULUS. CAMPE.

Greek.—KAMPE.*Names of Modern Naturalists, Latin and French.*

Pyralis Dantiana? (the caterpillar.) Pyralis Vitis.

Bosc DANTIC. Mem. de la Soc. d'Agriculture, 1786, trimestre d'été,
p. 22, pl. 4, fig. 6.

Pyralis Vitana. *Pyralis Fasciana.*

FABRIC. Ent. Syst.

Common Names.

Ver-Coquin. Teigne de la Vigne.

2.

Ancient Names.

Latin.—CONVOLVULUS. INVOLVULUS.

Names of Modern Naturalists, Latin and French.

2. *Procris Ampelophaga* (the caterpillar).

DUPONCHEL, Supp. à l'Hist. de Lépidopt. de France, tom. ii. p. 92,
pl. 8, fig. 2.

Procris Ampelophaga.

BAYLE-BARELLE, dei Insetti nocivi all Uomo, alle Bestie, all Agricoltura, Milano, 1824.

Procris Ampelophaga.

PASSERINI, Mem. s. due spec. d'insetti nocivi, un alle vite, l'altro all cavolo arborea nelle Mem. dell Acad. dei Georgifili, 1830, p. 4, tom. i. figs. 1 and 14.

Sphinx Ampelophaga.

HUBN. Supp. tom. xxiv. figs. 153 and 154.

Atychia Ampelophaga.

TREITSCHKE, tom. x. Supp. p. 100.

Sphinx Vitis.

FREYER, Beytr. 11, Band. xii. Hist. 5, 69, tab. 68, fig. 3.

Procris Vitis.

BOISDUVAL, Icones historiques des Lépidoptères nouveaux ou peu connus, tom. ii. p. 79, pl. 56, figs. 2 and 3.

Common Names.

Teigne du Raisin. Ver-Coquin.

Italian.—Ritorello.

3.

*Ancient Names.**Latin.*—INVOLVULUS. CONVULVULUS.*Names of Modern Naturalists.*

Cochylis Roserana (the caterpillar).

DUPONCHEL, Hist. des Lép. de France, tom. ix. p. 418, pl. 257,
fig. 8.

Tortrix Roserana.

FRÆLICH, Enum. tortric. regno Wurtemberg. indigen. sistens spec.
diff. synon. selecta, earum domicilia, et tempus cum descrip. p. 52,
No. 511.

Tinea Ambiguella.

HUBN., tab. 22, fig. 153 (fem.).

Cochylis Roserana.

TREITSCHKE, tom. viii. p. 280.

*Common Names.**French.*—Teigne de la Vigne. Rouleuse. Tordeuse.

4.

*Ancient Names.**Latin.*—INVOLVULUS. CONVULVULUS.*Names of Modern Naturalists.*

Tortrix Heparana (the caterpillar).

DUPONCHEL, Hist. Nat. de Lépidop. de France, tom. ix. p. 67,
pl. 238, fig. 7.

Tortrix Heperana.

WIEN, VERZ? ILLIGER, SCHRANCK, GOTZE, and TREITSCHKE, b. viii.
p. 58, No. 8.

Tortrix Padana.

SCHR., Faun. Boica, 11, 32, Ab. 5, 78, No. 1755.

Tortrix Carpiniana.

HUBN., tab. xviii. fig. 16 (fem.).

Tortrix Pasquayana.

FROEL., Vien, Verz, p. 36, No. 55.

Pyralis Fasciana.

FABRIC. Syst. Ent. iii. 2, 348, 24.

Lozotænia Carpiniana.

STEPHENS, Syst. Cat. of British Insects, p. 169, No. 6852.

La Chape-Brune.

GEOFFROY, tom. ii. p. 169, No. 118.

Phalène Chape-Brune du Lilas.

DEGEER, tom. i. Mem. 13, p. 403.

*Common Names.**French.*—Chape-Brune. Teigne du Lilas. Teigne du Raisin.
Teigne de la Vigne.

II.

Insects which are only occasionally Injurious to the Vine.

COLEOPTERA.

1.

*Ancient Name.**Greek.*—1. SPONDYLE.*Names of Modern Naturalists, Latin and French.**Melolontha vulgaris.* Le Hanneton vulgaire.*Common Names.**French.*—Le Hanneton.*English.*—Cockchaffer. Chaffer.

2.

*Ancient Name.**Latin.*—SPONDYLE GENUS SERPENTIS (Plin.)*Names of Modern Naturalists.**Melolontha vulgaris* (the larva). *Melolontha vitis* (the larva).

Common Names.

Ver blanc. Turc. Man. Courterolle.

Petit Hanneton d'été, or Hanneton vert (the grub).

ORTHOPTERA.

1.

Ancient Name.

BIURUS.

Names of Modern Naturalists.

Acheta Grillo-Talpa (Fab.). Talpa Ferrantis (Ald.).

Common French Name.

La Courtilière.

Common English Name.

The Mole-cricket.

LEPIDOPTERA.

1.

Ancient Names.

Greek.—KAMPE. Latin.—ERUCA.

Names of Modern Naturalists.

1. Arctia Purpurea (the caterpillar). L'écaille mouchetée.
2. Sphinx Elpenor (the caterpillar).
Sphinx, or Papillon rouge de la Vigne.
3. Sphinx Porcellus (the caterpillar).
Sphinx, or Papillon à bande rouge dentelée.

Common Name.

Chenilles de la Vigne.

III.

Insects said to be injurious to the Vine by the Ancients, but erroneously.

POLYPODA.

1.

Ancient Names.

Greek.—JULIOS.

Latin.—CENTIPEDES. MILLIPEDES.

Names of Modern Naturalists, Latin and French.

1. *Julus sabulosus.* Jules des sables.
2. *Julus terrestris.* Jules terrestre.
3. *Julus communis.* Jules commun.

French Common Names.

Mille-pieds.

English Common Names.

Centipedes. Hundred-legs.

COLEOPTERA.

1.

Ancient Names.

Greek.—KANTHARIS. *Latin.*—CANTHARIS.

Names of Modern Naturalists.

1. *Mylabris cichorii.* Mylabre de la chicorée.
2. *Lytta vesicatoria.* La Cantharide.

Common French Name.

Mouches-cantharides.

Common English Name.

Blister-fly.

2.

Ancient Names.

Greek.—IPS (Homer).

Names of Modern Naturalists.

Dermestes (the larva).

Common French Name.

Ver.

IV.

Names of Insects mentioned in ancient Authors, which are not injurious to the Vine, but of which the modern Names have been determined in these Researches.

1.

*Ancient Names.**Greek.*—MELOLONTHA. KANTHARIS.*Latin.*—SCARABÆUS. CANTHARIS.*Names of Modern Naturalists.*

Coleoptera (Lin.). Eleutherata (Fab.).

Common French Names.

Scarabées. Escarbots.

Common English Names.

Beetles. Black-beetles

2.

*Ancient Names.**Greek.*—KANTHARIS.*Latin.*—SCARABÆUS QUI PILAS VOLVIT (Plin.).*Names of Modern Naturalists, Latin and French.*

1. Ateuchus sacer. Scarabæus sacer.

2. Ateuchus Ægyptiorum. Scarabée sacré. Bousier sacré.

Common French Name.

Le Pillulaire.

3.

Ancient Names.

2. SCARABÆUS CUI SUNT CORNICULA REFLEXA (Plin.).
DUNG-BEETLE OF HORUS APOLLO, WHICH HAS TWO HORNS,
AND RESEMBLES A BULL.

Names of Modern Naturalists.

Latin.—Onitis Midas. *French.*—Bousier à deux cornes.

Common French Name.

Le Pillulaire.

4.

Ancient Names.

3. LUCANUS CUI SUNT CORNUA PRÆLONGA BISULCIS
DENTATA FORCIPIBUS IN CACUMINE (Plin.).

Names of Modern Naturalists.

Latin.—Lucanus cervus.

French.—Lucane Cerf-volant. Le Cerf-volant.

Common English Name.

The Stag-beetle.

5.

Ancient Names.

4. SCARABÆUS FULLO ALBIS GUTTIS (Plin.).

Names of Modern Naturalists.

Latin.—Cetonia aurata. *French.*—Cétoine dorée.

English.—Rose-chaffer. June-bug.

6.

Ancient Names.

5. IPS of HOMER, of St. Chrysostom, and the Grammarians
of the Lower Ages.

Names of Modern Naturalists.

Larva of Dermestes Pellio, and of D. Lardarius; larva of

another *Dermestes* (species unknown), very similar to the two foregoing, which eats the horns of the wild goat (*Capra Ægagra*).

7.

Ancient Names.

Greek.—KANTHARIS.

Latin.—SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).

Names of Modern Naturalists.

1. *Latin.*—*Curculio granarius*. *Calandra granaria*.
French.—La Calandre, or. le Charanson des grains.
2. *Latin.*—*Curculio frumentarius*. *Apion frumentarius*.
French.—Charanson du froment.
English.—Weevil. Wheat-weevil.

V.

Recapitulation of the Synonymy of the Insects, of which mention has been made in these Researches, arranged according to their natural order.

In order to render the synonymy of the insects of which mention has been made in these Researches useful to writers on agriculture, and to the learned, we have divided it, in the preceding pages, into three sections.

For the convenience of naturalists, it will be requisite to give this synonymy again, according to the natural order, without distinguishing the insects, which are very, or but little, or not at all, injurious to the vine. For the sake of shortness, we shall designate each insect by the name which it has in our best systems; this will be followed by the name in most general use in French: and we shall give the ancient names last printed in small capitals.

MYRIAPODA.

1. *Julus sabulosus*, Jule des sables.

JULIOS, CENTIPEDES, MILLIPEDES.

2. *Julus terrestris*, Jule terrestre.
JULIOS, CENTIPEDES, MILLIPEDES.
3. *Julus communis*, Jule commun.
JULIOS, CENTIPEDES, MILLEPEDES.

COLEOPTERA.

1. *Dermestes Lardarius*, D. Pellio, aut species proxuma, (the larva.)
Le Dermeste des fourrures ou de la corne, (the larva.)
IPS of HOMER.
2. *Ateuchus sacer*, le Bousier sacré, le Pelulaire.
CANTHARIS, SCARABÆUS QUI PILAS VOLVIT (Plin.).
3. *Ateuchus Ægyptiorum*, Bousier Égyptien.
CANTHARIS, SCARABÆUS QUI PILAS VOLVIT (Plin.).
4. *Onitis MIDAS*, le Bousier à deux cornes.
SCARABÆUS CUI SUNT CORNICULA REFLEXA.
5. *Lethrus cephalotes*, Schneider, le Coupeur.
KANTHARIS, MELOLONTHA, SCARABÆUS.
6. *Melolontha vulgaris*, le Hanneton ordinaire.
SPONDYLUS, (perfect insect.)
SPHONDYLIS GENUS SERPENTIS (Plin.), the larva.
7. *Cetonia aurata*, la Cétoine dorée.
SCARABÆUS FULLO ALBIS GUTTIS (Plin.).
8. *Lucanus cervus*, le Cerf-volant.
LUCANUS.
9. *Mylabris cichorii*, Mylabre de la chicorée.
KANTHARIS, CANTHARIS.
10. *Lytta vesicatoria*, la Cantharide.
KANTHARIS, CANTHARIS.
11. *Eumolpus vitis*, Gribouri de la vigne, (the perfect insect.)
Ver-Coquin, (the larva.)
IPS, (larva.) VOLUCRA, (perfect insect.)
12. *Rhynchites Bacchus*, Attelabe de la vigne, Becmare,
Tagliadizzo.
VOLVOX, CANTHARIS.

13. *Rhynchites Betuleti*, Velours-vert.

CANTHARIS.

14. *Calandra granaria*, la Calandre, Charanson des grains.

SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).

15. *Curculio frumentarius*, Charanson du froment.

SCARABÆUS PARVUS CANTHARIS DICTUS (Plin.).

ORTHOPTERA.

1. *Acheta Gryllo-Talpa*, Grillon-Taupe, la Courtillière.

BIURUS (Cicero, Plin.).

2. *Locusta Ephippiger*, *Locusta aptera*, *Locusta puppa*.

Sauterelle à cymbales, Sauterelle aptère, Sauterelle nymphe.

GAZA (Hebrew).

HEMIPTERA.

1. *Coccus vitis*, *Coccus Adonidum*, *Coccus Polonicus*, Cochenille de la vigne, Cochenille des serres, Cochenille de la Scleranthé.

THOLA, or THOLAATH (Hebrew). PHTEIRE (Greek).

LEPIDOPTERA.

1. *Arctia Purpurea*, l'Ecaille-mouchetée.

KAMPE, ERUCA (the caterpillar).

2. *Sphinx Elpenor*, Papillon rouge de la vigne.

KAMPE, ERUCA.

3. *Sphinx Porcellus*, Papillon à bande rouge dentelée.

KAMPE, ERUCA (the caterpillar).

4. *Pyralis Danticana*, *P. Vitana*, Chenille, or Teigne de la vigne, Ver-coquin, la Chenette.

CAMPE, INVOLVULUS, INVOLVUS, CONVULVULUS.

5. *Procris Ampelophaga*, *Atychia Ampelophaga*, *Procris vitis*, Teigne du raisin, Ritoritello.

CAMPE, INVOLVULUS, INVOLVUS, CONVULVULUS (caterpillar).

6. *Cochylis roserana*, *Tortrix roserana*, *Tinea ambiguella*,
Teigne de la vigne.

CAMPE, INVOLVULUS, INVOLVUS, CONVULVULUS (the caterpillar).

7. *Tortrix heparana*, *Pyralis fasciana*, *Lozotænea Carpiniana*, *Tortrix Padana*, *Tortrix Pasquayana*, Chenille de la chape-brune, Teigne du Lilas, Teigne de la vigne.

CAMPE, INVOLVULUS, INVOLVUS, CONVULVULUS (the caterpillar).

Thus it appears there are thirty-six species of insects known to the moderns, of which the corresponding names in Hebrew, Greek, and Latin, have been determined in these Researches.

VI.

Conclusion.

There are at the present time in France 800,000 hectares^m of land employed in the cultivation of the vine; the wine produced from which affords an annual revenue of 760,000,000 francs.

We can hardly, therefore, at it appears to me, be uselessly occupied in investigating the history and habits of the insects injurious to a plant which is the source of so much wealth. I am therefore inclined to believe that these Researches may not be so entirely devoid of interest or utility as to give me any reason to feel great regret at having thusⁿ taken up the time usually devoted by the Academy to objects of a much higher importance.

^m A *hectare* is two acres nearly.

ⁿ This paper was read at the Academy of Inscriptions and Belles-Lettres of the Institute, before it was communicated to the Entomological Society.

[Done into English, expressly for the *Entomological Magazine*, by
George Newman the Younger.]

ART. XLIV.—*Random Thoughts on Entomology, &c.*

By J. W. DOUGLAS.

“ O Nature, holy, meek, and mild,
Thou dweller on the mountain wild;
Thou haunter of the lonesome wood,
Thou wanderer by the secret flood;
Thou lover of the daisied sod,
Where Spring's white foot hath lately trod;
Finder of flowers fresh sprung and new,
Where sunshine comes to seek the dew;
Twiner of bowers for lovers meet;
Smoother of sods for poets' feet;
Thrice-sainted matron! in whose face,
Who looks in love will light on grace;
Far worshipped goddess! one who gives
Her love to him who wisely lives;
O, take my hand, and place me on
The daisied footstool of thy throne;
And pass before my darkened sight
Thy hand, which lets in charmed light;
And touch my soul, and let me see
The ways of God, fair dame, in thee.”

FROM my earliest years I have been a lover of nature, and the study of her various forms and features has always been to me a source of great delight. When but a boy, I have many a time wandered in the fields, admiring the beauties spread around me, and I look back on those hours as some of the happiest of my existence. And so it must ever be: the observation and examination of nature must always be productive of the purest pleasure.

Who, then, convinced of this, can look upon society, as at present constituted, and not regret that natural objects are so much neglected? I am aware that a taste for natural history has greatly increased of late, and I rejoice at it; but I am afraid that there is too much mere book-knowledge, which never can make that impression upon the mind as the actual examination of the objects does. Books are useful to teach the elementary parts of science, but for any thing more the real lover of nature will go to the fountain-head.

Much as I was delighted with the graphic account of the *Macroglossa Stellatarum* in the *Journal of a Naturalist*, yet how much greater was the pleasure when I first saw this fairy-like creature! It was the month of July; I was in the garden

looking at a splendid bed of Heartsease, when, quick as a sunbeam, the beauty came dancing over the flowers, now advancing, now retreating, sipping first at this flower and then at that, and seeming too happy to remain at rest: how I envied the little thing its joy! If I had merely read of this Sphinx without seeing it, I should not have known the pleasure that I then felt.

It is natural to wish, that the gratification we derive from any subject should be shared by those around us; such, at least, must be the desire of all those who love their species. Science is valuable in proportion to the number that it benefits. As a branch of natural history, Entomology presents as many advantages and pleasures as any other, and some that are peculiar to itself. I may be enthusiastic, but I cannot help thinking, that if a knowledge of it were more general, it would exert a very beneficial influence on the community. It may be said that this is questionable, because Entomology is only a collection of facts. But the same may be said of every other science; without facts there would be no reflection; and reflection, combined with the moral feelings, is the way to produce upright and proper conduct. Let none, therefore, despise mere facts, when he considers that on them hang all philosophy, and all hope of the amendment of the human race.

It is lamentable to reflect, that in the past ages of the world, thousands of beings capable of admiring and appreciating the works of nature, should, for want of education, have passed through life as mere animals, to whom existence has been comparatively a blank.

“ How many a rustic Milton has passed by,
Stifling the speechless longings of his breast,
In unremitting drudgery and care!
How many a vulgar Cato has compelled
His energies, no longer tameless then,
To mould a pin or fabricate a nail!
How many a Newton, to whose passive ken
Those mighty spheres that gem infinity
Were only specks of tinsel, fixed in heaven
To light the midnight of his native town!”

Chimerical as they appear to some, I do entertain high hopes and expectations of what human nature will eventually become. Though to the eye of benevolence the present state of

mankind is truly deplorable, yet, if we look back for only a few years, we shall see that it was much worse : society, therefore, has advanced, and who will attempt to set the bounds to its improvement? *That* can only be limited by the utmost development of man's mental powers, and until this becomes universal, man must go forward.

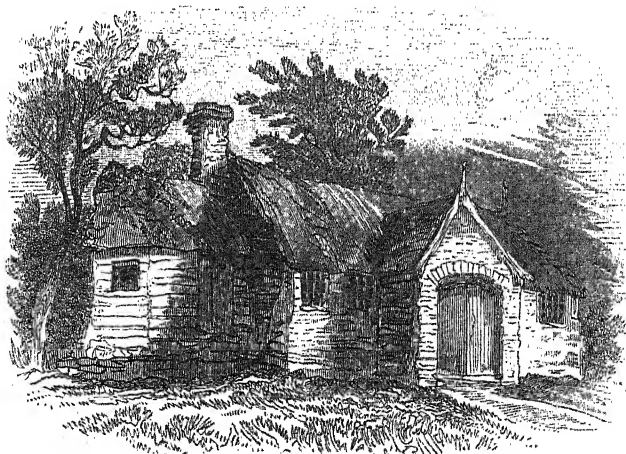
I wish I might live to see the day, when some branch of natural history shall be taught to *every* one. What science will then become we cannot now imagine. The mass of facts that will be collected, when every one contributes something, will be immense; some master mind will then arise to shape the whole into a system worthy of the great Creator, and the universal spirit of love will be clearly seen as animating and maintaining all creation.

At present, society resembles a field that has long been barren, but on which mind, like a plough, has entered. On a small portion the seed of education has been sown, and is springing up; another part is being broken up; but by far the largest part yet lies waste. It is the duty of every one to use his endeavours, however humble, to "speed the plough," and such a desire has influenced me to pen these thoughts.

"What is writ, is writ;
Would it were worthier!"

J. W. DOUGLAS.

16, Edward-street, Windsor-terrace, City-road,
3d February, 1837.



PALE'S MEETING-HOUSE.

ART. XLV.—*Query respecting the Collection belonging to the Entomological Club.*—By J. W. DOUGLAS.

SIR,—I have several insects, principally Coleopterous, which, being but a tyro in the science, I am unable to name; and from the limited nature of my Entomological acquaintance, I cannot compare them with a named collection. By the rules of the Entomological Club, published in the Entomological Magazine, I perceive that a visitor must be introduced by a member. Not being acquainted with any of the members, I take the liberty of asking you, if this rule is strictly enforced, or if an application to the Curator, to be allowed to compare my specimens with those of the Club, would meet with a refusal.

I am, Sir, yours respectfully,

J. W. DOUGLAS.

16, Edward-street, Windsor-terrace, City-road,
3d February, 1837.

EDITOR *loquitur*.

Although a reply has been sent to Mr. Douglas, it is proper to observe here that the restriction implied, as regards the admission of Entomologists to inspect the cabinets belonging to the Entomological Club, was never intended as any restriction at all; some form in affairs of this kind is necessary, in order to exclude persons who might be better avoided. We imagine there is scarcely an Entomologist in the kingdom unacquainted with all the eight members of the Club; and if there be, he will find nothing more easy than to obtain an introduction to one or other of them.

ART. XLVI.—*New Group of Orthoptera, Family of Mantides.*

By M. A. LEFEBVRE. (*Extracted from the Annales de la Société Entomologique de France.*)

(*Continued and concluded from p. 76.*)

THE *Eremiaphilæ*, in their perfect state, are furnished with exceedingly small elytra and wings, the relative proportions of which are most unequal. Referring to these organs among the other *Eremiaphilæ*, where they are better developed, and

do not present this striking disproportion, it would seem that these etiolated specimens have not been placed (like their allied species), at the period of their transformation from the pupa to the perfect state, in circumstances so favourable to the development of their organs of flight, but nevertheless they have just as much arrived at maturity. It must, however, be remarked that this imperfect organization appears more perceptible in the wings than in the elytra, inasmuch as they are merely rudiments, scarcely differing from what they were in the pupa state; whilst the elytra, though still etiolated, yet much larger than the wings, hide a part of the thorax, and possess the form and characters they would have assumed if yet further developed.

In calling attention to this abortive state, I have been induced to class together those species in which it is apparent, that it may be understood as regards the size of these parts, they *may* be met with much better developed; and consequently what I have said is susceptible of modification according to their dimensions.

It is extremely difficult to fix the precise time when the wings and elytra in *Orthoptera*, (but especially in certain groups,) attain their full size; for few insects in their last state afford such variety in their organs of flight, and that too in specimens unquestionably of the same genus, and which seem so nearly allied, that the knowledge we possess of the normal size of these parts in certain species would favour the opinion with respect to others of the same genus, that though apparently more or less abortive, their alary organs had attained their perfect state.

In fact, in a new species nothing is more difficult than to define the standard size, if the wings and elytra have not acquired that expansion which the allied species indicate. But though these organs may be a little scanty, it does not follow that they must always remain so, or that they are incapable of expansion, if, at its last change, the insect were placed in circumstances favourable to their development. Here is a difficulty: for in some well-known species we have sometimes large elytra and small wings, and *vice versa*; in others, again, we find merely the rudiments of both organs, which would lead one to suppose that their imperfection was no deviation from the intention of nature:—I will cite, amongst others, a

curious example of this fact in the genus *Saga* of Charpentier (*Tettigopsis*, Fischer).

Judging from the known species indigenous to temperate as well as more tropical lands, such as the south of France, Madagascar, the Crimea, Syria, Spain, South America, &c., we should say that the genus *Saga* is devoid of wings and elytra, and in its perfect state would only possess the rudiments of them. Like many other entomologists, I should have readily made the absence of these organs one of the characters of the genus, if a female specimen, (and, according to M. Serville, the males in Orthoptera are best provided with the organs of flight,) unquestionably of the genus *Saga*, which I saw in his collection, and which Stoll figures, (*Sauterelles à sabre*, pl. 11, No. 53,) had not been furnished with elytra, and the wings of which equalled in their expansion almost half the size of the insect!

Must we then conclude that the *Sagæ* which are known to us have not attained the full growth of which their alary organs are susceptible, or that there exist in the genus species, whose wings and elytra are sometimes developed, sometimes abortive, or more, that their full expansion can only happen very rarely? for we cannot admit their size in the present instance to be an anomaly.

Such is the doubt which in some groups seems almost impossible to resolve. But as it is evident that the organs of flight in *Orthoptera* are mostly very secondary, it is quite as certain that we shall be liable to fall into error when we attempt to determine by them whether or not an Orthopterous insect be in the perfect state; since many of these insects, if we may judge by the wings and elytra, remain all their life either in the larva or pupa state, and which, from the number of instances of it, may be considered their final stage. We meet also many specimens in the pupa state which would readily be supposed to have reached their last change, but more or less abortive in their organs; in fact, this last stage presents a host of anomalies. Still it is on the wings and elytra that I must rest the characters which I am compelled to establish of the different states in the *Eremiaphilæ*; so fugitive and unsatisfactory are the other distinctions to which I would fain have had recourse, but the investigation of which has hitherto baffled me.

In defining the three periods of life in which the *Eremiaphilæ* now under discussion are found, I shall make use of the usual terms, larva, pupa, and perfect state, and shall give a sketch of the characters by which I recognise their having reached them.

I consider as larvæ the *Eremiaphilæ* in which the rudiments of the elytra are joined, and where the wings are attached by a membrane loose only behind, and which so completely unites them, that it is almost impossible to discern their inner edge. These membranes do not permit the slightest movement. (Ex. *Erem. Typhon*.) In this first state, the insect, which continues to grow from its birth till its full development, will be found of various sizes. In these *Orthoptera* the membranes are very broad, and cover, one the metathorax, the other the mesothorax; and the elytra, still mere rudiments, reach as far as the roots of the wings.

In the pupa state, the elytra, on the form and expansion of which this new change seems to have had most effect, have increased more than the wings. They have become very apparent, but still very scanty, and in truth appear mere stumps, and, like the wings, much turned back at their edges; their inner margin is, however, separated from the metathorax, and they are capable of motion in their joints. This edge is closely seated in a groove on the metathorax, and one would readily suppose the elytrum still adhered to it, if it could not be moved from its place by lifting it: in short it is no longer the mere rudiments of an organ—it is the elytron itself, but not yet fully developed. I do not think that the metallic colour often observable on the under side is yet apparent, at least I have never seen any trace of it. The wing, though its extremity passes beyond the elytron, is still far from equalling it in size; its root is still attached to the metathorax by its inner edge, and the fold which appears in the perfect state does not yet exist. (Ex. *Erem. Khamsin*.)

The perfect state, though it affords, as I have before said, examples with the wings and elytra etiolated, must be acknowledged in the fullest development of these organs. The elytra now lap over each other; the wings, too, which have undergone a remarkable enlargement, now equal them in size, and their tendons, though still thick, are but just apparent, and accord

perfectly with the membrane of the wing, &c. (Ex. *Erem. Audouin, Cerisy, &c.*)

I have not remarked, as in the other *Mantida*, in the small number of *male Eremiaphilæ* I have examined, that their alary organs were more ample than those of the female; in both sexes they appear proportioned to the size of the specimen, and almost exactly alike, except in the more or less extended size of certain species.

The males have the abdomen more slender, and their elytra exceed it in dimensions, whilst in the females it protrudes far beyond the elytra, and is, indeed, often exceedingly bulky.

Notwithstanding the reluctance I feel to establish a new species, from knowledge only of the larva and pupa, and to furnish at best a defective description, since it must necessarily be as imperfect as the insect from which it is taken; yet I cannot think it right to omit those species which in their two states have no analogy to their neighbours. The desire to render this essay as complete as possible prompts me to this course.

I have met with few of the distinctive characters of the *Eremiaphilæ* amongst them in the forms of the head or prothorax. In fact, it would seem that these distinctions, if carefully examined, are subject to variation: in the first place naturally, and afterwards from the mode of preservation; for in many specimens the imperfect state of preservation destroys the shape, and more particularly that of the abdomen.

It is particularly in the figure and colour of the elytra and wings that we find the principal differences by which these insects are distinguished from each other; and these I shall employ, on account of the greater constancy which I find in these organs.

Whatever I may say about the prevailing colours in these descriptions must only be considered of secondary importance, as they are more or less altered in death. Although they take, at least in the pupa state, the tint of the soil they inhabit, their colour in the perfect state seldom varies from brown or dingy yellow, which are mostly the tints of the desert parts of Egypt and Syria.

In return for the sombre hue of their external covering, their wings and elytra are mostly ornamented beneath with a metallic blue or green, which vies in brilliancy with the most gaudy of the *Ruprestidæ* or *Cetoniæ*.

Their size, in comparison with the other *Mantidae*, is very diminutive; the length never exceeds 35 millimètres in the largest, and 20 millimètres in the smallest species I know.

It was between the 20th of February and the 15th of March that I took, in that part of the Lybian desert which lies between the Nile and the oasis of Bahryeh, the greater part of these *Orthoptera*; and had I not found *Erem. Hralil* in the pupa state in December, I should have concluded it was in May or June that they arrive at their full growth. I may just observe that I never met with any *Eremiaphila* in the desert of Cosseïr, although the rocky tracks, of which great part consists, bear a strong resemblance to the mountainous districts of Lebanon, where, however, these insects are found,—a fact which proves that they are not inseparable from desert wastes.

These *Orthoptera*, figured to the number of six in the work on Egypt, are (with the exception of fig. 4,) only shown in the larva and pupa state. I think I may add four species of them to those I know, including the genus *Heteronutarsus*.

The *Eremiaphila* which I here describe in the perfect state have been kindly furnished me by M. Audouin, professor of our Natural History Museum at Paris; by M. Géné, superintendent of that of Turin, and by Messrs. Audinet-Serville and Guérin. Unfortunately these liberal friends could give me no particulars but the habitats of these insects, which seem to be found alike in the sandy regions of Syria, in the Arabian Desert, and probably even in Desert Arabia itself. M. Bové, for some years chief gardener at Schoubra (the residence of the Pacha, near Cairo), who lately brought home a great number of Egyptian insects, was unable to inform me when he took the three species of *Eremiaphila* I found amongst them.

I must here beg those learned entomologists, whose names I have just mentioned, to accept my best thanks for their kind assistance. It is to me a pleasure as well as a duty to make known the worthy use they make of the precious materials they have at their disposal, and which they have so generously given up to me. In their hands, no doubt, they would have been far more profitable to the science which their learned writings are continually enriching.

[Translated for the *Entomological Magazine*, by J. F. Christy.]

ART. XLVII. — *Monographia Chalciditum.* By FRANCIS
WALKER.

(Continued from p. 26.)

“ — the green myriads in the peopled grass.”

Family CLEONYMIDÆ.

GENUS CLEONYMUS, Latreille.

Mas. Corpus squameum, pubescens: caput parvum, thorace paullo angustius, antice non impressum: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ fusiformes, latæ, pubescentes, 12-articulatæ, thorace breviores; articulus 1^{us}. longus, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. brevissimus; 4^{us}. et sequentes ad 10^{um}. breves, approximati, subcyathiformes; 11^{us}. et 12^{us} clavam fingentes conicam, acutam, subcavam, articulo 10°. duplo longiorem: mandibulæ arcuatæ, bidentatæ, similes, basi latæ subquadratæ, apice angustæ; dentes parvi acuti, externus paullo longior: maxillæ longæ, angustæ, subarcuatæ; lacinia acuminatæ, intus dilatatæ; palpi 4-articulati graciles filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subclavatæ æquales, 4^{us}. longifusiformis acuminatus 3°. plus duplo longior: labium conicum; ligula brevis, lata, antice ciliata; palpi 3-articulati lati clavati, articulus 1^{us}. mediocris clavatus, 2^{us}. brevis subrotundus, 3^{us}. latus securiformis 1°. longior: thorax longi-ovatus, angustus, subtus per longum sulcatus: prothorax magnus, antice angustior: mesothoracis scutum planum, sat magnum; parapsides vix conspicuæ; scutellum parvum, convexum, rhombiforme; paraptera et epimera bene determinata: metathorax conspicuus, postice angustior: abdomen cochleatum, planum, scite squameum, parce pubescens, thorace vix longius; segmenta 7 dorsalia conspicua subtus fere convenientia, 1^{um}. sat longum basi impressum, 2^{um}. brevissimum, 3^{um}. paullo longius, 4^{um}. adhuc longius, 5^{um}. maximum, 6^{um}. et 7^{um}. minima; segmenta ventralia dorsalibus nisi ad abdominis apicem obtecta: sexualia dum quietem agunt occulta: pedes subæquales, simplices; coxæ magnæ; femora gracilia; tibiæ rectæ; tarsorum

articuli 1°. ad 4^{um}. longitudine decrescentes, 5°. 4°. longior; ungues et pulvilli minuti; metapedes longiores, femora latiora, tibiæ subarcuatæ: alæ angustæ; nervus humeralis ramulum rejiciens nullum, ulnari fere duplo longior; cubitalis longus, arcuatus, radiali dimidio brevior.

Fem.—Antennæ subfusiformes, quam *mari* breviores; articulus 1^{us}. longus, fusiformis; 2^{us}. cyathiformis; 3^{us}. parvus, subrotundus; 4^{us}. longior et latior; 5^{us}. major; 6^{us} adhuc major; 7^{us}. et sequentes ad 10^{um}. 6ⁱ. magnitudine; 11^{us}. angustior, subcavus; 12^{us}. minimus, cuspiformis, 11. basi obtectus: abdomen fusiforme, thorace fere duplo longius, supra planum, subtus carinatum, non angulatum nec compressum; segmentum 1^{um}. breve, 2^{um}. brevissimum, 3^{um}. paullo longius, 4^{um}. 3°. duplo longius, 5^{um}. adhuc majus, 6^{um}. et 7^{um}. parva: segmenta ventralia nisi ad abdominis apicem vix conspicua: oviductus dum quietem agit occultus.

Sp. 1. Cleo. depressus. Mas et Fem. *Cupreus*, *antennæ mari nigræ* fem. *fulvæ apice nigræ*, *abdomen cyaneum*, *pedes rufi*, *alæ fusco maculatæ*.

Ichneumon depressus. *Fabr. Ent. Syst. Supp.* 231. 220, 221; *Coqueb. Illustr. Icon.* I. 21. Tab. 5. fig. 5.

Diplolepis depressa. *Fabr. Syst. Piezat.* 151. 13; *Spin. Ins. Lig. Fasc.* 4. 220.

Cinips depressus. *Lamarck, Hist. Nat. des Anim. sans Vertèbres* IV. 156. 7.

Cleonymus depressus. *Latr. Gén. Crust. & Ins.* IV. 29; *Spin. Classif. Diplo. Ann. Mus.* VII. 149; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 88; *Leach, Edin. Encycl.* IX. 144; *Westw. Zool. Journ.* IV. 16. Pl. II. Fig. 1; *Nouv. Dict. d'Hist. Nat.* VII. 89.

Mas. Caput cupreum, viridi varium: oculi obscure rufi: ocelli læte rufi: palpi flavi: antennæ nigræ; articulus 1^{us}. æneus, basi fulvus: thorax cupreus, viridi-æneo varius: metathorax læte viridis: abdomen cyaneo-viride: segmenta apice basique ænea: sexualia pallide flava, apice fusca: pedes rufi; coxæ æneo-virides; meso- et metatarsi flavi, apice fusci: alæ sublimpidæ, fusco obsolete nebulosæ; proalæ cuique vitta angusta fusca, apud stigma latior; squamulæ et nervi fusca, stigma minutum concolor.

Fem. Caput læte cupreum, antice viride: palpi pallide rufi:

- antennæ fulvæ; articuli 11^{us}. et 12^{us}. nigri: thorax læte cupreus, subtus cyaneo et purpureo varius: abdomen cyaneum, basi cyaneo-viride et fere glabrum, apice pubescens; segmenta apice basique cuprea, 6^{um}. omnino cupreum: oviductus fuscus: pedes rufi; coxæ æneo-virides; meso-et metapedum tibiæ fuscae, tarsi flavi apice rufi; protibiæ obscure rufæ: alæ albæ: proalæ fusco obsolete marginatæ, cuique fasciæ 2 connexæ fuscae, una ante alæ medium interrupta, altera prope apicem latior obscurior: metalæ apice et postice subfuscae. (Corp. long. lin. $1\frac{1}{5}$ — $2\frac{1}{4}$; alar. lin. $2\frac{1}{2}$ —3.)
- Var. β.*—*Mas*, metathorax cupreus: abdomen apice læte cupreum.
- Var. γ.*—*Mas*, thoracis suturæ virides: metathorax viridi-æneus, antice læte viridis.
- Var. δ.*—*Mas*, meso- et metatibiæ pallide fuscae; mesotarsi fuscii, basi albidii.
- Var. ε.*—*Fem.* antennis articulus 1^{us}. apice 2^{us}. que omnino fuscii.
- Var. ζ.*—*Fem.* thoracis suturæ æneo-virides: abdominis segmenta 1^o. ad 3^{um}. cyaneo-viridia, apice basique cuprea.
- Var. η.*—*Fem.* abdominis segmentum 1^{um}. læte cupreum.
- Var. θ.*—*Fem.* antennis articuli 1^{us} et 2^{us}. omnino fuscii.
- Var. ι.*—*Fem.* abdomen cyaneum, basi viridi-cyaneum, apice cupreo-æneum.

Common near London, from May to August, on posts which are perforated by *Ptinus* and *Anobium*, &c.; the males are to the females in the proportion of one to twenty. It runs fast, and is also found on windows, box trees, and elms; on the latter it has been taken at Paris by the Comte de Castelneau.

Sp. 2. Cleo. laticornis, (Haliday, MSS.) *Mas. Viridi-æneus cupreo varius, antennæ nigrae, pedes nigro-virides, alæ fusco maculatæ.*

Caput cupreo-æneum; vertex viridis: oculi obscure rufi: ocelli læte rufi: trophi obscuri: antennæ nigrae; articulus 1^{us}. viridi-æneus: thorax æneo-viridis: mesothoracis scutellum æneo-cupreum: abdomen obscure viride; segmenta apicalia æneo-varia: pedes virides; tibiæ nigrae; tarsi fuscii; meso- et metatarsi basi fulvi: alæ sublimpidæ, fusco obsolete nebulosæ; proalæ cuique vitta arcuata fusca, apud stigma latior et obscurior; squamulae et nervi fuscae, stigma minutum concolor. (Corp. long. lin. $1\frac{1}{3}$; alar. $2\frac{1}{3}$.)

Found by Mr. Haliday at Bexley.

Sp. 3. Cleo. obscurus. Mas. *Viridis, antennæ nigrae, abdomen cupreum, pedes rufi, alæ immaculatæ.*

Caput viride: oculi obscure rufi: ocelli læte rufi: antennæ nigrae; articulus 1^{us}. viridis: thorax viridis: abdomen obscure cupreum, basi læte viride: pedes rufi; coxæ virides; tibiæ pallide fusca; meso- et metatarsi albidi, apice obscure fusci: alæ sublimpidæ, immaculatæ; squamulæ et nervi fusca; stigma minutum concolor. (Corp. long. lin. 1½; alar. lin. 2.)

August, on the hazel, near London.

GENUS NOTANISUS.^a

Fem. Caput mediocre, transversum, thorace paullo latius, antice non impressum: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ subclavatæ, 13-articulatæ, versus os insertæ, thorace breviores; articulus 1^{us}, longus, gracilis, subarcuatus; 2^{us}. brevis, cyathiformis; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes ad 10^{um}. curtantes et latescentes; clava longi-ovata, apice abrupte attenuata acuminata et subtuſ truncata, articulo 10^o. longior: palpi maxillares 4-articulati, filiformes; articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. fusiformis 3^o. plus duplo longior: thorax longus, fusiformis, inæqualis; segmenta convexa, optime determinata: prothorax longissimus, antice angustior et declivis: mesothoracis scutum breve; parapsidum suturæ vix conspicuæ; paraptera et epimera maxima; scutellum mediocre, subrhombiforme: metathorax maximus, per medium sulcatus, apice angustus: metascutellum abdomini petiolulum fngens: abdomen ovatum, convexum, petiolatum, thorace brevius; segmenta 1^o. ad 6^{um}. transversa parallela subæqualia, 7^{um}. parvum; ventralia dorsalibus obtecta: oviductus occultus: pedes mediocres, subæquales; coxæ magnæ; femora subclavata; tibiæ rectæ; tarsi graciles, articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior, unguis et pulvilli parvi; mesotarsi incrassati: alæ angustæ; nervus humeralis ramulum nullum rejiciens, ulnari longior; cubitalis longus, subarcuatus, angulum acutum radiali fngens et vix brevior; stigma ramulum brevem emittens ad nervi radialis apicem propensum.

Sp. 1. Not. versicolor. *Fem.* *Cupreus rufo cyaneo et purpureo varius, antennæ fulvæ, abdomen purpureum, pedes rufi, alæ fusco maculatæ.*

^a *ρῶτος* dorsum, *ἀνίσος* inæqualis.

Corpus scitissime squameum, glabrum, nitens; caput æneo-viride, subtus rufum: oculi et ocelli rufi: palpi maxillares nigri: antennæ læte fulvæ: gula rufa: thorax subtus rufus: prothorax cupreus, antice rufus: mesothoracis scutum purpureum, antice cyaneo viridi et cupreo varium: scutellum paraptera et epimera cuprea: metathorax læte purpureus, basi cyaneo viridi et cupreo varius: petiolus rufus: abdomen purpureum, basi viride micans: pedes rufi; coxæ, trochanteres et femora supra fusco-purpurea; tarsi apice fusi: alæ albæ; proalis fasciæ 2 fuscae, una ad nervi humeralis apicem angusta, altera apud stigma latior; squamulæ et nervi fusca, stigma minutum concolor. (Corp. long. lin. $1\frac{2}{3}$; alar. lin. $1\frac{2}{3}$.)

July; south of France.

The structure of the four following genera excludes them from the families of Chalcidites. *Prosopeon* resembles *Pteromalus*, but has dilated middle-feet like *Eupelmus*, &c.

GENUS MACRONEURA.^b

Mas. Corpus sublineare: caput mediocre, thorace vix latius, antice non impressum: oculi mediocres, subrotundi, non extantes; ocelli in vertice triangulum fingentes: antennæ moniliformes, 13-articulatæ, corpore paullo breviores; articulus 1^{us}. crassus longus fusiformis; 2^{us}. cyathiformis; 3^{us}. minimus; 4^{us}. et sequentes ad 10^{um}. subovati, æquales; clava subfusiformis, articulo 10^o. duplo longior non latior: mandibulæ quadratæ, subarcuatæ, tridentatæ, intus concavæ, apice angustæ; dentes minuti recti, externus acutus, internus latus brevissimus: maxillæ longæ, subarcuatæ; lacinia lobatæ, acuminatæ; palpi 4-articulati, filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. subæquales, 4^{us}. longifusiformis 3^o. multo longior: labium ovatum; ligula brevis, lata; palpi tri-articulati, breves, moniliformes; articulus 2^{us}. brevissimus: thorax longi-ovatus; segmenta convexa, bene determinata: prothorax magnus, antice angustus et declivis: mesothoracis scutum breve, parapsidum suturæ distinctissimæ; paraptera et epimera magna; scutellum ovatum: metathorax magnus, per medium sulcatus: abdomen longiovatum, planum, thorace paullo brevius; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: pedes validi, simplices, æquales; coxæ sat magnæ; femora et tibiæ

^b μακρὸς longus, νεύρα nervus.

recta; tarsorum articuli 1°. ad 4^{um}. longitudine decrescentes, 5^{us}. 4°. longior; ungues et pulvilli minuti; protibiæ ejusque apice spina longa valida subarcuata: alæ mediocres; nervus humeralis ulnari multo longior, ante costam attingit incrassatus, ramulum nullum rejiciens; cubitalis longus, subarcuatus, radiali dimidio brevior; stigma ramulum vix conspicuum emittens.

Fem. Caput thoracis latitudine: antennæ clavatæ, submoniliformes, juxta corporis dimidio longi; articuli 3^{us}. et 4^{us}. minimi; 5°. ad 10^{um}. latescentes; clava conica, articulo 10°. paullo longior vix latior: abdomen sublineare, thorace paullo longius, apice acuminatum, subtus carinatum; segmenta dorsalia subæqualia, ventralia vix conspicua; oviductus non exertus.

Sp. 1. Mac. maculipes. Mas et Fem. Viridi-æneus, antennæ nigrae, abdomen cupreum, pedes nigri flavo-cincti, alæ fusca.

Mas. Obscure viridis: oculi ocellique obscure rufi: antennæ nigrae; articulus 1^{us}. nigro-viridis: mesothoracis scutellum, paraptera et epimera cupreo-ænea: abdomen cupreum, basi viride; sexualia fusca, subexerta: pedes læte flavi; coxæ et femora nigro-ænea; tibiæ apice nigrae; tarsi apice nigro-fusci; protibiæ et protarsi fulva, hi apice et illæ subtus fusca: alæ angustæ, fusca; squamulae et nervi nigro-fusca; stigma minutum, concolor.

Fem. Caput viride, postice æneum: thorax cupreo-æneus: prothorax viridis: abdomen cupreum, basi micans et viridi varium: coxæ et femora ænea; trochanteres, genua et protarsi fulva; tibiæ nigro-fusca; tarsi læte flavi apice nigri. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{2}{3}$ —1 $\frac{1}{4}$.)

Var. β. Mas, abdomen cupreum, apice nigro-cupreum.

Var. γ. Fem. abdomen basi omnino cupreum.

June to September; on grass beneath trees; near London; Isle of Wight. Found by Mr. Haliday, at Port Marnock, Ireland; and by the Rev. G. T. Rudd, in Durham.

GENUS MEROSTENUS.*

Mas. Corpus angustum, sublineare: caput magnum, transversum, thorace paullo latius: oculi mediocres, subrotundi, extantes: ocelli in vertice triangulum fingentes: antennæ 13-articulatæ, graciles, filiformes, corporis longitudine; articulus 1^{us}. longus, gracilis, subarcuatus; 2^{us}. mediocris, cyathiformis; 3^{us}. et 4^{us}. minimi;

* μέρος pars, στενός angustus.

5^{us}. et sequentes ad 12^{um}. lineares, curtantes; 13^{us}. 12^o. longior, apice conicus: thorax longus, linearis; segmenta bene determinata, convexa: prothorax magnus, subquadratus: mesothoracis scutum parvum; parapsidum suturæ optime determinatæ; scutellum breviovatum; paraptera et epimera magna: metathorax magnus, per medium sulcatus; abdomen sublineare, planum, thorace brevius, basi angustum, apice subquadratum; segmenta transversa subæqualia: pedes longi, graciles, simplices; coxæ magnæ; femora juncea; tibiæ rectæ; tarsi longi, articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior; ungues et pulvilli minuti; alæ longæ, angustæ; nervus humeralis ulnari vix longior, ramulum nullum emittens; cubitalis mediocris, rectus; radialis cubitali duplo longior; stigma ramulum brevem emittens.

Sp. 1. Mer. Phedyma. Mas. *Viridis, antennæ nigræ, abdomen nigro-æneum basi rufum, pedes flavi, alæ subfuscæ.*

Corpus scite squameum, pubescens: caput viride, antice cyaneo-viride: oculi ocellique rufi: antennæ nigræ, pubescentes; articulus 1^{us}. fulvus, apice fuscus, 2^{us}. fusco-viridis: thorax viridis: abdomen nigro-æneum, læve, basi rufescens viridi indistincte varium, fere glabrum, apice hirtum: sexualia fusca: pedes flavi; metafemora apice fusca; mesotibiæ fusco cinctæ; tarsi fusi: alæ subfuscæ; squamulæ et nervi pallide fusca: stigma minutum concolor. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

August; near London,

GENUS CEA, *Haliday.*

Fem. Caput mediocre, transversum, subquadratum, antice impressum, thorace paullo latius: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ graciles, fili-formes, corporis dimidio longiores; articulus 1^{us}. longissimus, gracilis; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. et sequentes breviores, æquales, approximati; thorax longi-ovatus, angustus, convexus: prothorax mediocris: mesothoracis parapsidum suturæ bene determinatæ; scutellum parvum: metathorax magnus, abdomini petiolum fingens: abdomen longi-ovatum, angustum, compressum, thorace paullo longius; segmenta transversa, subæqualia, ventrem obtegentia: oviductus exertus: pedes longi, graciles, subæquales; coxæ magnæ; femora recta; tibiæ simplices; tar-

sorum articuli 1°. ad 4^{um}. longitudine decrescentes, 5^{us}. 4°. longior; unguis et pulvilli minuti: alæ nullæ.

Sp. 1. *Cea pulicaris*. Fem. *Nigro-ænea*, aptera, antennæ nigræ, tarsi nigro-picei.

Nigro-ænea, nitens, lævis, glabra, aptera: oculi et ocelli obscure rufi: antennæ nigræ: oviductus vaginæ nigræ, abdominis dimidio longiores: pedes nigri; coxæ et femora nigro-ænea; tarsi nigro-picei. (Corp. long. lin. $\frac{2}{3}$.)

Found by Mr. Haliday, at Holywood, on grass under trees.

GENUS PROSON.^d

Mas. Caput mediocre, transversum, thorace vix latius: oculi mediocres, subrotundi, non extantes: ocelli in vertice triangulum fingentes: antennæ graciles, clavatæ, 13-articulatæ, corporis dimidio paullo breviores; articulus 1^{us}. longus, rectus; 2^{us}. cyathiformis; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes ad 10^{um}. mediocres, subæquales; clava ovata, articulo 10°. multo latior et plus duplo longior: mandibulæ quadratæ, 4-dentatæ, subarcuatæ; dentes parvi acuti, externus arcuatus longior: maxillæ longæ, angustæ, arcuatæ; laciniae acuminatæ, lobatæ; palpi 4-articulati, graciles, filiformes; articuli 1^{us}. 2^{us}. et 3^{us}. subæquales, 4^{us}. fusiformis acuminatus 3°. multo longior: labium longi-ovatum, angustum; ligula brevis; palpi 3-articulati, breves, moniliformes; articulus 2^{us}. brevissimus: thorax ovatus; prothorax brevissimus, supra vix conspicuus: mesothoracis parapsidum suturæ bene determinatæ; scutellum brevi-ovatum: metathorax mediocris, per medium carinatus: abdomen ovatum, planum, thoracis longitudine; segmenta transversa, subæqualia: pedes graciles; femora recta; tibiæ simplices: tarsorum articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. longior; mesotarsi lati; unguis et pulvilli minuti: alæ mediocres: nervus humeralis ulnari multo longior, ramulum nullum rejiciens; cubitalis longus, rectus; radialis cubitali dimidio longior; stigma ramulum nullum emittens.

Sp. 1. *Pro. montanum*. *Mas*. *Viridi-æneus*, antennæ fusæ, abdomen nigro-cupreum, pedes fulvi-æneo et fusco varii, alæ sublimpidæ.

^d πρόσωπον, persona.

Aeneus, squameus, parum nitens, parce pubescens: oculi et ocelli obscure rufi: antennæ pallide fuscae; articulus 1^{us}. nigro-aeneus; 2^{us}. supra nigro-fuscus: abdomen nigro-cupreum, nitens, læve, fere glabrum: sexualia fulva, exerta: pedes fulvi; coxæ et femora aenea; tibiæ fusco cinctæ; mesotarsi fuscii; pro- et metatarsi apice fuscii: alæ sublimpidæ; squamulae et nervi fulvae; stigma parvum, fuscum. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β. Caput et thorax viridia: mesothoracis scutellum cupreo-aeneum: abdomen basi viridi-aeneum: tibiæ fuscae, basi fulvae.

September, on heath; Cumberland and North Wales.

GENUS STENOCERA.^c

Fem. Corpus longum, gracile, sublineare, scitissime punctatum, fere glabrum: caput mediocre, subquadratum, thorace paullo latius; frons sulcata et utrinque elevata: oculi magni, extantes, supra non approximati: ocelli in vertice triangulum fingentes: antennæ gracillimæ, filiformes, 11-articulatae, prope os insertae, thorace longiores; articulus 1^{us}. longus, gracilis, subarcuatus; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. brevissimus; 4^{us}. et sequentes ad 10^{um}. curtantes; 11^{us}. longi-ovatus, 10^o. paullo latior et longior: thorax fusiformis: prothorax maximus, angustus, antice attenuatus: mesothoracis scutum magnum, planum, semicirculum fingens; parapsidum suturae vix conspicuae; scutellum subrhombiforme; paraptera bene determinata, utrinque inter scutum et scutellum conspicua: metathorax mediocris: abdomen fusiforme, thorace longius et paullo angustius; segmenta 1^o ad 5^{um}. transversa, incurva, subæqualia; 6^{um}. angustum, convexum, acuminatum: oviductus occultus: pedes longi, graciles; coxæ parvae; femora juncea; tibiæ rectae; tarsorum articuli 1^o ad 4^{um}. curtantes, 5^{us}. 4^o. longior: ungues et pulvilli minimi; mesopedum tibiæ longiores apice spina valida armatae, tarsi breviores lati: alæ mediocres; nervus humeralis ulnari multo longior, ramulum nullum rejiciens; cubitalis brevissimus, stigmate punctiformi ramulum nullum emittente terminatus; radialis brevis, cubitali duplo longior.

Sp. 1. *Sten. Walkeri*. *Fem.* *Cupreus viridi varius*, antennae nigrae, pedes fusco-virides, alæ limpidæ.

^c στενός angustus, κέρας cornu.

Stenocera Walkeri. *Curtis, Brit. Ent.* 596.

Caput viride, postice cyaneo-viride: oculi ocellique rufi: antennæ nigrae, pubescentes; articulus 1^{us}. viridis: thorax cupreus, obscurus, utrinque postice et subtus viridis: abdomen cupreum; discus ater: pedes fere glabri; coxæ necnon propedum femora et tibiæ viridia; genua fulva; meso- et metapedum femora et tibiæ fusca, apice fulva; tarsi nigro-fusci, basi fulvi; mesotarsi pallidiores: alæ limpidæ; squamulae et nervi pallide fusca; stigma minimum, concolor. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. $1\frac{1}{2}$.)

July, near London, on lime and oak trees.

GENUS CALOSOTER.¹

Mas.—Corpus angustum, sublineare, scitissime punctatum, fere glabrum: caput mediocre, thoracis latitudine, antice vix impressum: oculi magni, subrotundi, extantes, supra approximati: ocelli in vertice triangulum fingentes: antennæ filiformes, graciles, pubescentes, 13-articulatae, thorace paullo longiores, ad os insertae; articulus 1^{us}. longus fusiformis, 2^{us}. mediocris sublinearis, 3^{us}. parvus, 4^{us}. et sequentes ad 10^{um}. gradatim curtantes vix latetcentes; clava longi-ovata, articulo 10^o. paullo latior et plus duplo longior: mandibula quadrata, subarcuata, tridentata, similes; dentes parvi, externus et medius acuti subæquales, internus latus obtusus: maxillæ longæ, angustæ, subarcuatae; lacinia dilatissimæ, subrotundæ, ciliatæ; palpi 4-articulati, breves; articulus 1^{us}. mediocris longi-cyathiformis, 2^{us}. et 3^{us}. subcyathiformes 1^o. paullo longiores et latiores, 4^{us}. fusiformis ciliatus 3^o. multo longior: labium conicum; ligula brevis, lata, ciliata; palpi 3-articulati, subclavati, breves, articulus 1^{us}. mediocris longi-cyathiformis, 2^{us}. minutus subrotundus, 3^{us}. latior ovatus: thorax longi-ovatus, depressus: prothorax magnus, antice angustior et declivis: mesothoracis latera elevata; scutum concavum; parapsides distinctæ, parallelæ, approximatae; scutellum latum, postice semicirculum fingens: metathorax conspicuus: pectoris segmenta bene determinata: abdomen sublineare, planum, basi angustius, apice conicum, thorace paullo longius; segmenta 6 dorsalia, 1^{um}. 3^{um}. 4^{um}. et 5^{um}. subæqualia, 2^{um}. et 6^{um}. breviora; ventralia dorsalibus oblecta: sexualia occulta: pedes mediocres; propedes breviores; metapedes longiores; mesopedum tibiæ apice latae et spina longa valida armatae, tarsi incrassati; coxæ parvæ; femora gracilia; tibiæ rectæ;

¹ Καλον lignum, σωτήρ servator.

tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi: alæ mediocres; nervus humeralis ulnari brevior, ante costam attingit incrassatus, ramulum nullum rejiciens; cubitalis subarcuatus, radiali paullo brevior; ramulus stigmate emissus nervi radialis apicem fere attingens.

Fem.—Corpus quam *mari* longius: antennæ extrorsum crassiores; articulus 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 10^{um}. curtantes et latescentes: abdomen longi-fusiforme, thorace multo longius, apice attenuatum et acuminatum; segmenta dorsalia subæqualia, 2^{um}. brevius, 6^{um}. angustius acuminatum, 1^{um}. et sequentia fere ad 4ⁱ. apicem depressa utrinque elevata.

Sp. 1. Cal. vernalis. Mas. et Fem. *Nigro-cupreus, antennæ nigre, pedes nigri, alæ fusce.*

Mas.—Caput nigro-viride: oculi et ocelli rufi: antennæ nigre; articulus 1^{us}. nigro-viridis: gula fulva: thorax æneo-cupreus, obscurus, subtus viridis nitens: metathorax cyaneo-viridis nitens: abdomen nigro-cupreum, fere læve, breviter et parce pubescens: sexualia fusca: pedes nigri; femora et coxæ nigro-ænea; mesotibiis spinæ fusce; protarsi basi et genua fulva; meso- et metatarsi fusci, basi fulvi: alæ fusce; squamulæ et nervi obscure fusca; stigma minutum, concolor.

Fem.—Caput cyaneo-viride: thorax nigro-cupreus; latera viridi varia; metathoracis latera læte cyanea: abdomen nigro-cupreum, basi micans, subtus cyaneo-viride: oviductus subexertus; vaginæ nigre: protarsi nigro-fusci: meso- et metapedum tibiæ apice fulvæ, tarsi fulvi apice fusci. (Corp. long. lin. $1\frac{1}{2}$ — $2\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ — $2\frac{3}{4}$.)

Var. β.—*Mas.* abdominis segmentum 1^{um}. basi æneo-viride.

Var. γ.—*Fem.* mesothoracis scutum cyaneo-vittatum: abdomen basi purpureo-cupreum.

Var. δ.—*Fem.* protarsi pallide fusci, basi subtus fulvi.

May; near London: with *Cleonymus depressus*; and the males and females in the same proportion. It runs slowly, and moves sideways when approached. Found at Holywood, Ireland, by Mr. Haliday.

Sp. 2. Cal. æstivalis. Mas. et Fem. *Nigro-cupreus, antennæ nigre, pedes nigri flavo cincti, alæ limpide.*

Mas.—Caput æneum, postice et subtus cyaneo-viride: palpi maxil-

lares nigri, labiales fuscii: oculi et ocelli rufi: antennæ nigræ; articulus 1^{us} nigro-viridis: thorax nigro-æneus, obscurus: pectus viridi-cyaneum: abdomen æneo-cupreum, parum nitens: pedes nigri; coxæ virides; femora nigro-viridia; genua et tibiæ apice subtus flava; mesotibiæ flavæ, basi nigræ: alæ limpidæ; squamulæ et nervi pallide fusca; stigma minimum, concolor.

Fem.—Caput cupreo-æneum, subtus et postice cyaneo-viride: thorax cupreo-æneus: metathoracis latera viridi-ænea: abdomen cupreum, basi fere glabrum, apice dense pubescens: oviductus subexertus; vaginæ nigræ: metapedum tibiæ flavæ basi nigræ, tarsi basi flavi: mesotarsi fuscii, basi flavi; alarum squamulæ et nervi fulva. (Corp. long. lin. 1—2; alar. lin. $1\frac{1}{3}$ — $2\frac{1}{4}$.)

Var. β.—*Mas.* metathorax et abdominis latera viridia.

Var. γ.—*Fem.* caput cyaneo-viride; vertex æneus.

Var. δ.—*Fem.* abdominis segmentum ultimum basi cyaneum.

Var. ε.—*Fem.* metatibiæ nigræ, apice flavæ.

Var. ζ.—*Fem.* pectus purpureo-cyaneum: coxæ et femora cyanea.

June and July; near London. In habit like *C. vernalis*. The males are most abundant in June, and stand in clusters near the holes perforated by *Anobium*.

GENUS EUPELMUS, *Dalman*.

Caput *mari* magnum transversum subquadratum thorace latius non impressum, *fem.* mediocri juxta thoraci latum antice subimpressum: oculi sat magni, subrotundi, vix extantes: ocelli in vertice triangulum fingentes: antennæ clavatæ, 13-articulatæ, pubescentes; articulus 1^{us}. longus, validus, subfusiformis; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes subcyathiformes, usque ad 10^{um}. latescentes et curtantes; clava ovata, articulo 10°. latior et plus duplo longior: mandibulæ oblongo-quadratæ, subarcuatæ, tridentatæ, basi latæ; dentes parvi, externus longior acutior, internus brevior obtusior: maxillæ longæ, subtrigonæ, basi latæ; lacinia subarcuatæ, acuminate, intus lobatæ; palpi 4-articulati, graciles, breves, fere filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. fusiformis acuminatus 3°. duplo longior: labium breve, ovatum; ligula brevis, lata, ciliata; palpi 3-articulati, breves, crassi, filiformes, articulus 1^{us}. longi-cyathiformis, 2^{us}. brevissimus, 3^{us}. fusiformis vix 1ⁱ. longitudine: thorax longi-ovatus: prothorax mediocris, antice declivis: mesothoracis scutum longum, depressum, utrinque elevatum; scutellum obconicum: metathorax mediocris: abdomen longi-ovatum, thorace

paullo angustius vix longius; segmenta per discum incurva, 1^{um}. longum, 2^{um}. breve, 3^{um}. 2°. longius, 4^{um}. adhuc longius, 5^{um}. 1°. longitudine, 6^{um}. breve: pedes validi; coxæ sat magnæ; femora recta; tibiæ simplices; tarsorum articuli 1°. ad 4^{um}. longitudine decrescentes, 5^{us}. 4°. longior; ungues et pulvilli parvi; mesopedum tibiæ apice spina longa valida armatæ, tarsi lati ciliati: alæ completæ mutilatæ aut nullæ.

Sp. 1. Eup. urozonus. Fem. *Viridi-æneus, antennæ nigrae, pedes flavi viridi et fusco cincti, alæ limpidæ completæ.*

Eupelmus urozonus. *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; N. ab Ess. Ich. affin. monogr. II. 74.*

Viridi-æneus, parum nitens, scitissime squameus, parce et breviter pubescens: caput antice cyaneo-viride: oculi ocellique obscure rufi: palpi maxillares nigri: antennæ nigrae; articulus 1^{us}. nigro-viridis: thorax planus: abdomen planum, nitens, fere læve, basi æneo-viride; discus cupreus: oviductus vaginae nigrae, flavo late cinctæ, abdominis dimidio vix breviores: pedes flavi; coxæ, proet metafemora viridia; trochanteres fuscii; tibiæ et mesofemora viridi cincta; protarsi nigro-fuscii, basi pallidiores; meso- et metatarsi pallide fuscii, basi flavi, horum scopulæ nigrae: alæ limpidæ, completæ; squamulæ et nervi fulva; nervus humeralis ulnari vix longior, ramulum nullum rejiciens; cubitalis mediocris, subincurvus; radialis brevissimus, cubitali non longior; stigma minutum, ramulum brevissimum emittens. (Corp. long. lin. $\frac{1}{2}$ — $1\frac{1}{3}$; alar. lin. $\frac{3}{4}$ —2.)

Var. β.—Prothoracis latera antice cyanea.

Var. γ.—Thorax viridis: protarsi pallide fuscii: mesotibiæ flavæ, medio supra fuscæ.

Var. δ.—Caput et thorax viridia: mesothoracis scutellum cupreum.

Var. ε.—Pro- et metatibiæ virides, apice flavæ: mesotibiæ fusco-cinctæ: tarsi flavi, apice pallide fuscii: protarsi obscure fulvi.

Var. ζ.—Thorax cyaneo-viridis.

Var. η.—Thorax cupreo-æneus.

May to October; near London, Windsor Forest, Isle of Wight, Devonshire, South of France. Taken at Paris by the Comte de Castelneau.

Sp. 2. Eup. Deggeri. Fem. *Viridi-æneus, antennæ nigrae, abdomen cupreum basi fulcum, pedes fusco-flavi, alæ brevissimæ.*

lares nigri, labiales fusci: oculi et ocelli rufi: antennæ nigræ; articulus 1^{us} nigro-viridis: thorax nigro-æneus, obscurus: pectus viridi-cyaneum: abdomen æneo-cupreum, parum nitens: pedes nigri; coxæ virides; femora nigro-viridia; genua et tibiæ apice subtus flava; mesotibiæ flavæ, basi nigræ: alæ limpidæ; squamulæ et nervi pallide fusca; stigma minimum, concolor.

Fem.—Caput cupreo-æneum, subtus et postice cyaneo-viride: thorax cupreo-æneus: metathoracis latera viridi-ænea: abdomen cupreum, basi fere glabrum, apice dense pubescens: oviductus subexertus; vaginæ nigræ: metapedum tibiæ flavæ basi nigræ, tarsi basi flavi: mesotarsi fusci, basi flavi; alarum squamulæ et nervi fulva. (Corp. long. lin. 1—2; alar. lin. $1\frac{1}{3}$ — $2\frac{1}{4}$.)

Var. β.—*Mas.* metathorax et abdominis latera viridia.

Var. γ.—*Fem.* caput cyaneo-viride; vertex æneus.

Var. δ.—*Fem.* abdominis segmentum ultimum basi cyaneum.

Var. ε.—*Fem.* metatibiæ nigræ, apice flavæ.

Var. ζ.—*Fem.* pectus purpureo-cyaneum: coxæ et femora cyanea.

June and July; near London. In habit like *C. vernalis*. The males are most abundant in June, and stand in clusters near the holes perforated by *Anobium*.

GENUS EUPELMUS, *Dalmun*.

Caput *mari* magnum transversum subquadratum thorace latius non impressum, *fem.* mediocre juxta thoraci latum antice subimpressum: oculi sat magni, subrotundi, vix extantes: ocelli in vertice triangulum fingentes: antennæ clavatæ, 13-articulatæ, pubescentes; articulus 1^{us}. longus, validus, subfusiformis; 2^{us}. longi-cyathiformis, mediocris; 3^{us}. et 4^{us}. minimi; 5^{us}. et sequentes subcyathiformes, usque ad 10^{um}. latescentes et curtantes; clava ovata, articulo 10^o. latior et plus duplo longior: mandibulæ oblongo-quadratæ, subarcuatæ, tridentatæ, basi latæ; dentes parvi, externus longior acutior, internus brevior obtusior: maxillæ longæ, subtrigonæ, basi latæ; lacinia subarcuatæ, acuminate, intus lobatæ; palpi 4-articulati, graciles, breves, fere filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres subæquales, 4^{us}. fusiformis acuminatus 3^o. duplo longior: labium breve, ovatum; ligula brevis, lata, ciliata; palpi 3-articulati, breves, crassi, filiformes, articulus 1^{us}. longi-cyathiformis, 2^{us}. brevissimus, 3^{us}. fusiformis vix 1^l. longitudine: thorax longi-ovatus: prothorax mediocris, antice declivis: mesothoracis scutum longum, depressum, utrinque elevatum; scutellum obconicum: metathorax mediocris: abdomen longi-ovatum, thorace

paullo angustius vix longius; segmenta per discum incurva, 1^{um}. longum, 2^{um}. breve, 3^{um}. 2^o. longius, 4^{um}. adhuc longius, 5^{um}. 1ⁱ. longitudine, 6^{um}. breve: pedes validi; coxæ sat magnæ; femora recta; tibiæ simplices; tarsorum articuli 1^o. ad 4^{um}. longitudine decrescentes, 5^{us}. 4^o. longior; ungues et pulvilli parvi; mesopedum tibiæ apice spina longa valida armatæ, tarsi lati ciliati: alæ completæ mutilatæ aut nullæ.

Sp. 1. Eup. urozonus. Fem. *Viridi-æneus, antennæ nigrae, pedes flavi viridi et fusco cincti, alæ limpidæ completæ.*

Eupelmus urozonus. *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; N. ab Ess. Ich. affn. monogr. II. 74.*

Viridi-æneus, parum nitens, scitissime squameus, parce et breviter pubescens: caput antice cyaneo-viride: oculi ocellique obscure rufi: palpi maxillares nigri: antennæ nigrae; articulus 1^{us}. nigro-viridis: thorax planus: abdomen planum, nitens, fere læve, basi æneo-viride; discus cupreus: oviductus vaginæ nigrae, flavo late cinctæ, abdominis dimidio vix breviores: pedes flavi; coxæ, pro et metafemora viridia; trochanteres fusci; tibiæ et mesofemora viridi cincta; protarsi nigro-fusci, basi pallidiores; meso- et metatarsi pallide fusci, basi flavi, horum scopulæ nigrae: alæ limpidæ, completæ; squamulæ et nervi fulva; nervus humeralis ulnari vix longior, ramulum nullum rejiciens; cubitalis mediocris, subincurvus; radialis brevissimus, cubitali non longior; stigma minutum, ramulum brevissimum emittens. (Corp. long. lin. $\frac{1}{2}$ —1 $\frac{1}{2}$; alar. lin. $\frac{3}{4}$ —2.)

Var. β .—Prothoracis latera antice cyanea.

Var. γ .—Thorax viridis: protarsi pallide fusci: mesotibiæ flavæ, medio supra fusca.

Var. δ .—Caput et thorax viridia: mesothoracis scutellum cupreum.

Var. ϵ .—Pro- et metatibiæ virides, apice flavæ: mesotibiæ fusco-cinctæ: tarsi flavi, apice pallide fusci: protarsi obscure fulvi.

Var. ζ .—Thorax cyaneo-viridis.

Var. η .—Thorax cupreo-æneus.

May to October; near London, Windsor Forest, Isle of Wight, Devonshire, South of France. Taken at Paris by the Comte de Castelneau.

Sp. 2. Eup. Degeceri. Fem. *Viridi-æneus, antennæ nigrae, abdomen cupreum basi fulvum, pedes fusco-flavi, alæ brevissimæ.*

Ichneumon non ailé à deux vessies mobiles. *De Geer*. II. 909.

Tab. 31. fig. 22.

Diplolepis vesicularis . *Spin. Ins. Lig.* III. 161. 13.

Eupelmus De Geeri . *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; N. ab Ess. Hym. Ich. affin. monogr.* II. 76.

Viridi-æneus, parum nitens, scitissime squameus, parce et breviter pubescens: oculi ocellique obscure rufi: palpi nigri: antennæ nigræ; articulus 1^{us}. fulvus, basi fuscus: gula fulva: pro- et metathorax quam *E. uroazono* majores: abdomen cupreum, convexum, subcylindricum, scitissime rugosum, basi fulvum; segmenta subæqualia, supra non incurva: oviductus exertus, fulvus, medium ante abdomen subtus apparens; vaginæ nigræ, fulvo cinctæ, abdomine quartato longitudine: coxæ et femora ænea; trochanteres et genua fulva; tibiæ æneo-fuscæ, apice flavæ; tarsi flavi, apice pallide fusci: alæ limpidae, brevissimæ. (Corp. long. lin. $\frac{3}{4}$ —1 $\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. flavus.

Var. γ.—Tibiæ flavæ, basi fuscæ.

Var. δ.—Femora omnia subtus, mesofemora basi quoque æneo-fusca; mesotibiæ flavæ, basi fuscæ.

Var. ε.—Caput cyaneo-viride.

Var. ζ.—Thorax cyaneo-viridis.

June to September; near London, Cumberland, Isle of Wight, Devonshire, Cornwall. Found by Mr. Haliday, on sand-hills, at Port Marnock, in Ireland; and at Paris by the Comte de Castelnau.

Sp. 3. Eup. excavatus. Mas. *Cyaneus rufo varius, antennæ nigræ, abdomen cupreum, pedes rufi, alæ nullæ.*

Eupelmus excavatus . *Dalman, Kongl. Vetens. Acad. Handl. för år 1820; N. ab Ess. Hym. Ich. affin. monogr.* II. 79.

Caput æneo-viride, magnum, thorace latius, non impressum: oculi ocellique obscure rufi: antennæ nigræ, robustæ, corporis dimidio longiores; articulus 1^{us}. flavus: thorax rufus, inæqualis, glaber, fere lævis; discus cyaneus, rufo varius: abdomen cupreum, ovatum, subcylindricum, nitens, læve, glabrum, basi cyaneum, thorace paullo brevius et latius; segmenta subæqualia: pedes pallide rufi; tarsi flavi, apice fusci; mesopedum femora coxæ et tibiæ supra fusca; meso- et metafemora apice supra fusca: alæ nullæ. (Corp. long. lin. 1.)

Var. β.—Thorax cyaneus, cupreo varius, utrinque et subtus piceus : meso- et metafemora necnon metatibiæ supra fusca.

May, September; near London; Isle of Wight. Taken at Paris by the Comte de Castelneau.

GENUS ERICYDNUS, *Haliday*.

Mas.—Caput mediocre, transversum, convexum, juxta thoraci latum, non impressum : oculi mediocres, subrotundi, non extantes : ocelli in vertice triangulum fingentes : antennæ 13-articulatæ, longissime fusiformes, corpore paullo breviores ; articulus 1^{us}. longus, rectus ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes ad 10^{um}. æquales, subquadrati, approximati ; clava conica, acuminata, articulo 10°. angustior et plus duplo longior : mandibulæ subtrigonæ, arcuatæ, angustæ, acuminatæ, edentatæ : maxillæ longæ, angustæ, subarcuatæ ; lacinia acuminatæ, lobatæ ; palpi 3-articulati, filiformes, articuli 1^{us}. et 2^{us}. mediocres subæquales, 3^{us}. fusiformis acuminatus 2°. multo longior : labium brevi-ovatum ; ligula brevis ; palpi 3-articulati breves crassi moniliformes, articulus 2^{us}. brevissimus : thorax ovatus, planus : prothorax minimus, supra non conspicuus : mesothoracis segmenta maxima ; parapsidum suturæ vix conspicuæ ; paraptera inter scutum et scutellum convenientia ; scutellum subrhombiforme : metathorax brevissimus : abdomen ovatum, planum, basi latum, thorace paullo brevius et angustius ; segmentum 1^{um}. longum ; sequentia breviora, subæqualia : pedes longi ; femora recta ; tibiæ simplices ; tarsorum articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. longior ; metapedes propedibus longiores ; mesopedes adhuc longiores, tibiæ cuique spina longa valida, tarsi crassi ciliati : ungues et pulvilli parvi : alæ breves, angustæ ; nervus humeralis ulnari plus triplo longior, ramulum nullum rejiciens ; cubitalis mediocris, rectus ; stigma ramulum brevem emittens.

Fem.—Caput thorace angustius : antennæ subclavatæ, 12-articulatæ, corporis dimidio longiores, quam *mari* paullo breviores ; articuli 3°. ad 9^{um}. curtantes ; clava ovata, articulo 9°. latior et fere duplo longior : abdomen ovatum, thoracis statura et forma oviductus occultus.

Sp. 1. *Eri. paludatus*. (Haliday, MSS.) *Mas.* et *Fem.* *Nigro-cyaneus, rufo varius, antennæ nigrae, abdomen cupreo-piceum, pedes rufi fusco cincti, alæ subfuscae.*

Mas.—Caput nigro-cyaneum : oculi ocellique rufi : antennæ nigrae ; articulus 1^{us}. nigro-viridis, basi pallidus : thorax nigro-cyaneus,

utrinque et subtus rufus: abdomen cupreo-piccum: sexualia fusca: pedes pallide rufi; tarsi apice fusci; metafemora apice supra fusca; protibiæ pallide fuscae; metatibiæ et metatarsi nigro-fusca: alæ subfuscae, apice obscuriores; squamulæ et nervi fusca; stigma minutum, concolor.

Fem.—Thorax antice rufo fasciatus: abdomen basi rufum: protibiæ pallide rufæ. (Corp. long. lin. $\frac{5}{4}$ —1; alar. lin. 1—1 $\frac{1}{4}$.)

Found by Mr. Haliday at Holywood and Port Marnock.

Sp. 2. *Eri. strigosus*. Mas. et Fem. *Viridis aut æneus, antennæ nigræ, abdomen cupreum, pedes fusco-fulvi, alæ subfuscae.*

Encyrtus strigosus. Nees ab Ess. *Hym. Ich. affin. monogr.* II. 227.

Mas.—Viridis, scite squameus, parum nitens, fere glaber: oculi ocellique obscure rufi: antennæ nigræ, pubescentes; articulus 1^{us}. nigro-viridis: palpi maxillares flavi; articulus 3^{us}. fuscus: abdomen nigro-cupreum, nitens, basi fusco-cupreum: sexualia fusca: pedes pallide fulvi, pubescentes; tarsi supra fusci; metapedum femora supra fusco vittata, tibiæ et tarsi nigro-fusca, illæ basi fulvæ: alæ subfuscae; squamulæ et nervi fusca; stigma minutum, concolor.

Fem.—Viridi-æneus: abdomen cupreum, basi fusco-cupreum: propedes obscure fulvi, tarsi fusci: mesopedes pallide fulvi, tarsi fusci: metapedes nigro-fusci, femora subtus fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—*Mas.* caput et thorax viridi-ænea: abdomen basi fulvo-cupreum.

Var. γ.—*Mas.* profemora et protibiæ obscure fulva.

Var. δ.—*Mas.* caput et thorax ænea: abdomen basi fulvum.

Var. ε.—*Fem.* caput, prothorax et mesothoracis scutum viridia: abdomen omnino nigro-cupreum: pro- et mesopedes pallide fulvi; metapedes fusci, tibiæ basi et femora subtus fulva.

Var. ζ.—*Fem.* *Var. ε.* similis: caput et thorax omnino viridia.

Var. η.—*Fem.* caput cyaneo-viride: thorax viridis.

Var. θ.—*Fem.* pro- et metapedes obscure fulvi.

Var. ι.—*Fem.* caput, prothorax et mesothoracis scutum viridicyanea: abdomen omnino cupreum: propedes obscure fulvi.

March, June, September, October; near London, Windsor Forest, Isle of Wight, North Wales, Cumberland, Scotland. Found by Mr. Haliday, at Port Marnock on the sea-coast, at Holyhead, and in the Isle of Skye.

ART. XLVIII.—*Note on Malachius ruficollis*, Panz.; and *M. bipunctatus*, Bab. By C. C. BABINGTON, M.A.

IN the *Magazine of Natural History*, vol. vii. p. 278, fig. 49, I have given, in conjunction with Mr. Westwood, figures of male and female specimens of the latter of the above-mentioned insects. We then considered, that the fact of both sexes having been found, was a sufficient proof of its specific distinctness from *M. ruficollis*. My friend, Mr. J. L. Brown, has this year taken in Norfolk, specimens of both of these supposed species, and by placing them in company, under glasses, he has been enabled to see them in such a situation, as to prove that they are only the sexes of one species. As one of my specimens of *M. bipunctatus* is a female, it must be considered as a curious instance of that sex appearing with the markings, although not the form of the male. Panzer's figure (*Index Entom.* pt. viii. No. 2,) is not my supposed species, but a rather poor representation of the true *ruficollis*. It would appear also to be a male! as it has not the prominent abdomen of the females of this genus. Will not this fact throw great doubt upon the specific distinctness of several of the species in this genus and family?

As your journal is more generally read by entomologists than any other with which I am acquainted, I send this notice for insertion in your pages.

CHARLES C. BABINGTON.

Oct. 1836.

P.S. It may be interesting to mention, that I took a single specimen of *Carabus clathratus* in Glen Castle, Erris county, Mayo, in the month of July, 1836.

ART. XLIX.—*Observations on Spontaneous or Equivocal Generation.* By J. B.—N.

SIR,—Upon looking over the *Manual of Entomology* by Burmeister, I observe that he declares himself an adherent of the doctrine of equivocal generation: he speaks of it in so

decisive a manner, without giving hardly any arguments for it, that a person may think it was so plainly and fully established as to require none. As the work is likely to be much used by young entomologists, as an introduction to the science, they may be led to believe, from the positive way in which he states it, that it is a well-established fact; which is well known not to be the case. If you think the following observations upon it worthy a place in your magazine, they are at your service. I wish that some abler person had undertaken the task, as the above doctrine has always formed one of the favourite arguments of those who deny the superintendence of a Supreme Being over the material world, and contend that every thing has sprung from a fortuitous assemblage of atoms; which the doctrine of equivocal generation expressly supports.

Burmeister, in his description of the generation of insects, § 203, says, "With respect to observations upon the equivocal generation of insects, we possess many credible authorities which confirm it;" he then cites the phenomenon of the *Phthiriasis*, and the authorities for it. The Acari or mites being referred to a different class from insects by modern entomologists, he discards, after a few remarks, from consideration in his observations, which are chiefly confined to the above species of lice. He then considers, that it is from the secretions that have a tendency to corruption that they originate. At the conclusion of the above section, he says: "Precisely the same takes place in the *Entozoa*. Von Bâr has observed this development in the remarkable *Bucephalus*, and it is as good as proved in many others; why should not, therefore, the skin, which has precisely the same structure as the mucous membrane of the intestinal canal, give rise also to parasites peculiar to it? I know nothing that satisfactorily opposes the adoption of it. Equivocal generation consequently takes place in the lowest insects; they can originate from it, and do so frequently." When philosophers are wedded to an opinion or theory, how ludicrous it is to observe (were it not also a lamentable proof of the weakness of the human mind) their earnest and anxious endeavours to wrest every fact they possibly can to the support of their favourite doctrine, until they prove too much, and some succeeding writer, with ruthless hand, uncovers and exposes the sandy foundation on which they have built, and dashes the whole superstructure to the ground. I know not what Von

Bâr's observations were, but Mr. Metford seems not to have paid any attention to them; for at the conclusion of his essay upon the origin of *Entozoa*, in your last volume, (p. 204,) after proving the fallacy of the different hypotheses that have been assumed to account for their origin, he says, "The reader is, I doubt not, by this time sensible of the great difficulties with which this problem is beset; and must perceive that if my position be true, viz. that worms do not gain access to animals by the mucous cavities, nor are they transmitted by the parent to their young, that the doctrine of spontaneous generation is inevitable. *But as this is a doctrine inconsistent with reason and analogy*, the question, as I before hinted, must be left *sub judice* until future facts and observations shall discover the truth;" thus, after he had exposed the false positions they had assumed, he, notwithstanding, hesitated not in the least to declare his firm opinion against equivocal generation.

Burmeister has laid himself open to the above observation of proving too much, in the last quotation I made from him: in the preceding section, (§ 202,) he assumes the principle, "that from nothing, nothing can be produced." We may also assume, without fear of contradiction, the converse principle expressed in the common proverb, "like produces like;" if, therefore, "the skin has precisely the same structure as the mucous membrane of the intestinal canal," how comes it to pass that if we admit equivocal generation, it does not produce the same parasites? why should they be in one situation *Insecta*, and in the other *Vermes*? Certainly the same structure must of necessity produce the same forms upon the germs that are excreted from it. It would, I doubt not, puzzle the most ardent advocate of the doctrine, to give a satisfactory solution to the above query. If "the universally distributed organizable matter" is the parent of the germs, (admitting, for argument, that it is endowed with the principle of vitality,) it must likewise produce the same forms wherever it is situated, or otherwise we must admit as many sorts of organizable matter as species of parasites, both external and internal. With regard to the supposed transformation of the intestinal flocks into intestinal worms, do we not know that every part that is separated externally from any of the higher or more fully developed organized beings, (be it remembered he is treating of man, the highest organized being,) dies the instant that it is severed from the

part to which it was attached? We know of no instance where it ever has been observed to have the least vitality after separation: if a large piece has been severed, it has a little muscular contraction, which continually decreases, until, in a short time, it entirely ceases; then from what argument can we suppose a part that is severed internally, should possess an independent life, so as to form an organized being?

But what does Burmeister mean by using the expression, "universally distributed organizable matter" being the parent of the germs of new organisms? I always understood that organizable matter meant matter that could be taken by an organized being, and by its nutritive system assimilated into itself, to supply the continued waste of its parts. I have never yet heard that it supplied any part of the vitality of the being: when the vital principle stops, the whole system stops with it: the organism may be surrounded with innumerable quantities of organizable matter, yet it will not be revived; or, if by any means its nutritive system is rendered incapable of duly performing its operations, it may take what quantity of organizable matter it pleases, without receiving any benefit from it, until at last it dies, notwithstanding its supply of organizable matter. This is a convincing proof that there resides no vitality in matter, however highly it may be capable of being organized. Certainly there is an organizable matter generally distributed, but then it never was endued with vitality since the Almighty called the type of every being into existence. Burmeister seems not to have distinguished between the vital principle, and the matter of which an organized being is composed. We cannot assume that the vitality of an organized being resides in any of its parts separate from the other, because an injury, whether by sudden violence or long-continued disease, in any of its chief functions, so as to stop its operations, will produce equally fatal results: though the chemical composition of its parts remains the same as during life, it then becomes subject to the laws of inanimate matter. If, therefore, we cannot predicate life of any of the separate parts of which a being is composed, how can we assume that the sweat, or any other secretion, (one particular one excepted, which is diametrically opposed to the doctrine,) can give origin to any germ? As we descend in the scale of animated nature below insects, we find some beings capable of propagating

themselves by division or by shoots; but it must be remembered that the greater part of them may be considered as an assemblage of beings,—as for instance, in a *tania*, in which each succeeding joint, as they are commonly called, is an exact repetition of the preceding, so that if a part of it is broken off, it is as equally organized as the parent; none of its functions are deficient; the only difference is, that it has not so many of its descendants attached to it. The shoots of a polypus, animal flower, &c. are equally perfect animals with the parent, capable of receiving nutriment, or even of propagating, before they separate. This mode of generation is only found in those animals whose organization is the most simple and the most equally distributed through the whole body, so that when the parts separate, each possesses a sufficient organization for its future life. It is never found in the higher organized beings; still, even where it is found, a parent of the same type is required. There is no doubt but that a particular state of the secretions is more favourable for the nutriment and increase of all parasites, whether external or internal; just as every plant requires a particular soil, or every other organized being a particular kind of nourishment.

We know of no instance of equivocal generation in any of the lower grades of animal or vegetable life that are open to continued observation: it is only assumed in the case of those beings whose minute size evades the sight unless aided by the most delicate instruments, or whose habitation is so obscure, that in order to be seen, their lives must pay the price of it: and therefore in neither case can they be observed, but at detached periods of their lives. In those whose reproduction has been observed, it varies very much: nearly, if not quite all the different modes that have been observed, have been found among the *Infusoria* or *Intestina*; we cannot tell whence the germs come in the infusions; but that is no reason that we should declare they spring from nothing. In the various vegetable infusions which produce animalcules, what a dilemma spontaneous generation leaves us in! we must either admit that the vital principle of the animalcule springs from absolute nothing, or else that vegetable matter, whether living or dead, can produce animal life;^a which I hope shows the absurdity of

^a The difficulties attending spontaneous generation, induced one celebrated natural historian of the last century to deny life to the infusoria and spermatic

puff-balls, lichens, or even the green mantle of the ruined wall, were produced by spontaneous generation engendered by corruptible matter. If the corruption of vegetables is unable to produce vegetable life, how can the "secretions that are inclined to corruption" produce animal life? the analogy holds to the utmost minutia. A parent of the same type is absolutely required to produce the animal as well as the vegetable. It is commonly said that facts are stubborn things: equivocal generation has been obliged to yield to them in the vegetable world, and it will no doubt soon yield to them in the animal world likewise. Burmeister should also have recollected how the naturalists who denied the doctrine of equivocal generation, about the commencement of the last century, were puzzled to account for the appearance of a quantity of parasites from the pupa of a butterfly,—a fact then as triumphantly appealed to by the asserters of the doctrine, as the appearance of the *Phthiriasis* is appealed to by himself. But what was the expression of Ray? Although even with his great knowledge of nature he could not give a positive explanation of it, yet he sincerely declared that he thought they were produced from eggs laid by a parent of the same species. In what a striking view does his opinion show itself, now that it is ascertained to be the fact. Equivocal generation has here been signally overthrown and vanquished.

Burmeister does not plainly assert that the head-louse springs spontaneously, because he knew that every day's experience would contradict him; and that if it could be shown that one of the species described by him as generating equivocally, did not originate in that manner, analogy would conclude that the remaining species were generated also in the common mode. I have known children to be entirely cleansed from them by combing only. I have also known a dog cleansed in the same manner from the lice with which it was infested; which is a plain proof that they spring not from the secretions, but from individuals of the same species. Would Burmeister dare to assert that the cheese-mites and the cheese-hoppers spring spontaneously (which is still the opinion of many of the vulgar)? surely not. The cheese has no vital principle to impart; and he would scarcely go the length to assert that dead matter can originate a living organized being: indeed he said as much, in speaking of the dead lappets of the skin that peel off; but

perhaps he might urge that the milk of which the cheese is made is an animal secretion. But what can be urged in the case of mites found in the mould of gardens under flower-pots, &c. The mould is not an animal secretion; if, therefore, several species of *Acari* do not originate equivocally, why should one species of the same genus have a spontaneous origin given to it?

Burmeister also says, respecting unimpregnated females being fruitful, that it perfectly proves the possibility of spontaneous development: this I positively deny. Equivocal generation means, according to the instances cited by Burmeister, that the secretions of one type of beings produce a germ, and that germ in its development produces a being of a different type, (the secretions of man, for instance, producing worms, mites, and lice.) Now, in what respects does the generation of the *Aphides* resemble this or any of the exceptions to the general law mentioned by him? (upon some of which he casts well-founded doubts.) Do they not produce the very same typical beings? The same principle, I laid down at first—"like produces like"—is most strictly adhered to: a parent of the same type is invariably required. When was an aphid, moth or bee^c ever observed to produce the germs of any other insect? Does not, in every instance which he quotes, the unimpregnated female lay eggs which produce the same species? The eggs were laid according to the regular course of nature, in the very same manner in which impregnated ones were laid: they sprung not from external secretions, but from the proper oviduct of the insect; so that, so far from supporting spontaneous generation, they point directly contrary. There are organs whose sole function is the secreting of germs: and the germs produced by those secretory powers in their full development, produce the same typical beings; the only difference being in the non-impregnation by the male, which takes place regularly in one family; being in fact their regular mode of propagation: the common sexual generation of other insects being their exception—not their rule. But it appears that when the fruitfulness of the females is exhausted by exposure to cold, or what other cause

^c Burmeister, or his translator, has made a ludicrous error at the bottom of page 312, where he speaks of a queen-bee laying unfruitful eggs, which produced fruitful females.

it may be, it then requires renovation; which is provided for by the last laying of germs by the female,—many of which are males, who, after they come to maturity, impregnate the females and proceed as before. How can it be cited in support of equivocal generation? If an *aphis* was observed to spring from the exudation of vegetables, then it would support it, but not otherwise.

I have purposely avoided using any theological arguments in support of my view against the doctrine; not that I think they should not be used, but because I wished to show how untenable it is, from the consideration of fully observed facts in the economy of organized beings, and from analogical reasoning; but I should wish very much that every assenter of the doctrine would consider them fully, and observe how inconsistent with the true notions of a creative Being it is, that any assemblage of matter alone should produce animal or even vegetable life.

I remain, Sir, yours most respectfully,

J. B——N.

Note to the word Kerfe.

P.S.—It appears by Burmeister, in his Introduction, p. 48, that some German authors have adopted the word *kerfe*, derived from *kerben*, signifying to notch or indent, as a name for insects in the German language. Mr. Shuckard, in his note to the above, states that he has retained the paragraph. Although it has more a German than English interest, perhaps he was not aware that the word is also used technically in the English language, by all workers in wood, (whether sawyers, joiners, cabinet-makers, &c.) to designate the incision made by a saw in a piece of wood: in fact there is no other word to express the same meaning. A cut may be made by any cutting instrument,—as knives, chisels, axes, &c.—no part of the substance cut being taken away, but only severed with them; but a *kerf* signifies an open incisure, the sides of which are parallel to each other, and a part of the substance taken out, which can only be done with a saw; it is, in general, used in apposition with saw,—as saw-*kerf*; I have seen it printed *kirf*, *kerf*, and even *carf*,—the pronunciation being always *kerf*. The application of the word to insects, is, I believe, as happy an expression in our language, as *Insecta* to the Latins, or *Evroqua*

to the Grecians ; but whether it would be worth while to overthrow the common name of the class, in order to adopt a vernacular term, is a question that must be left to the discretion of future writers to decide.

ART. L.—*Narrative of Capt. Henry Foster's Voyage to the Southern Atlantic Ocean, in His Majesty's Ship, Chanticleer.*
By W. H. B. WEBSTER. Bentley, London, 1834.

[EDITOR *loquitur*.]

THE times in which we live are troublous times, and we see no reason why we should be exempted from the trouble that surrounds us, that hems us in on every side. Now is the time when we shall be expected to solicit a truce from that steady animosity which, on the part of certain individuals, has dogged us so unweariedly, to kneel to those who have perhaps at times trembled at the bare mention of our rod. Of these acts of humiliation we will consider at a more convenient opportunity ; but there is an act of justice which we must first perform. Some years ago our zeal for Entomology led us to set our faces against a constant bickering at that time carried on between the authors of two rival publications. We thought this bickering highly injurious to the true interests of the science. We determined to oppose it to the uttermost. The practice was continued, and we kept our resolution. The offender was our personal friend ; but this was no screen ; we fancied it a public duty to reprehend, and we reprehended most severely. We were perfectly sincere in what we said ; we weighed the consequences well, and, as the result proved, accurately : we counted and paid the cost. The infinite ramifications of the opposition to our progress, by the friends of the work in question, was a perfect model of human ingenuity : the mind of man is shrewd in the science of persecution, to a degree with which few are thoroughly acquainted. It seems a most luxurious occupation. Now, it may appear strange to thee, dear reader ! that it is in consequence of this *very* science of persecution being now cultivated most elaborately against Mr. Curtis's work — that *very* work which we criticised so

severely — that *very* work whose friends pursued us so long and so assiduously with this *very* persecution — that we now pen these sentences in condemnation of a system whose exquisitely organized power we have resisted, conquered, and outlived. It is difficult to contend with a hidden system of evil, and the perpetrators, in this instance, are careful to veil their deeds in kindred darkness. Every one who reads the pages of the *Entomological Magazine*, in simplicity of heart, will, we are confident, acknowledge that the system of injuring individuals has never there, for a moment, been entertained; we have been very severe to what, in our judgment, appeared wrong; but we have, at the same time, diligently sought out the good and the useful, for the very pleasure of praising and recommending. The ill feeling that exists in some breasts against Mr. Curtis, is a matter with which we cannot contend; but we advise, — in perfect sincerity we advise, — those who entertain such a feeling, against its exhibition in a manner calculated to injure him. The works of Mr. Curtis and Mr. Stephens are not only useful but beautiful works: they are the works of our fellow-countrymen, — and that is in itself a claim on us. That we can agree with every thing that these authors are pleased to say, — that we can praise and approve of all they write, — is not to be expected. Perfection is not the inheritance of man; but until we are faultless ourselves, let us bear with the faults of others. We have already said, that the knowledge of the existence of this evil spirit against Mr. Curtis called forth these remarks; furthermore, our abhorrence of the system is so great, that we think it our duty to oppose it, and it will give us real pleasure if these honest observations tend to that gentleman's advantage, by opening the eyes of the unwary, by cautioning the yet uninitiated lover of Entomology against evil counsel.

Now, with respect to our own observations on Mr. Curtis's work, we do unhesitatingly declare our conviction, that they were too severe: it was a quarrel in which we ought not to have interfered, and over which we had no jurisdiction. We regret the publication of these observations, and we trust Mr. Curtis will be satisfied with this confession.^a

^a Mr. Curtis's name was omitted in the two last lists, as a Subscriber for five copies of the *Entomological Magazine*. The Editor was not aware that Mr. Curtis continued to take them; no further reason for the omission existed. We

All this is foreign to our subject, therefore, let us now turn to the volumes on our table: let us become "Skimmers of the Sea." The South Atlantic regions seem, until late years, to have possessed but slight attractions to the Naturalist, or, if attractive, his researches have been few and unimportant. We cannot look on the voyage of the Chanticleer as one at all calculated to furnish us with a clear and complete view of the productions of the Southern Seas. Captain Foster was an Astronomer only; and it appears to us, that, not content with the laurels he must necessarily win from his own important observations, he entertained an idea that the discoveries of his comrades in other branches of science might, perhaps, eclipse his own; and as, though actuated by a feeling so entirely unworthy of him, he does not seem to have afforded that assistance to others, which was requisite to render their discoveries of real and permanent utility.

Captain King, employed, at the period of the Chanticleer's voyage, in a survey of the Straits of Magellan, has brought to this country a valuable collection of insects, of which an account will appear in the *Transactions of the Linnæan Society*, by Messrs. Curtis, Haliday and Walker. Mr. Darwin also has returned from South America with multitudes of novelties, many of them of most singular forms. We hope to say something of both these collections hereafter.

The narrative of Captain Weddell's voyage to the Antarctic regions, published many years ago, contains a variety of interesting matter. This navigator, we believe, pushed his course further southward than any other, either before or since, and he describes the sea in the extreme south, as being perfectly free from ice. His narrative is also remarkable, as containing the best authenticated story of a mermaid,—a story so interesting that we shall make no apology for introducing it in Captain Weddell's words. The event occurred at Hall Island.

A man was stationed on one side of the island, to take care of some produce, while the rest of the crew were engaged on the other side. He had gone to bed, and about ten o'clock he heard a noise resembling human cries; and as day-light in those latitudes never disappears, he got up, and looked about,

have great pleasure in now saying, that the numbers were taken regularly, and of thanking Mr. Curtis for his kind support.

expecting to find some one in need of assistance; however, he found nothing, and returned to bed. He very soon heard the noise repeated, and got up a second time, but still saw nothing. Conceiving, however, the possibility of a boat being upset, and that some of the crew might be clinging to some detached rocks, he walked along the beach, and presently heard the noise more distinctly than before, but now in a musical strain. On searching round, he saw an object lying on a rock about a dozen yards from the shore, at which he was somewhat frightened. The face and shoulders were of human form, and of a reddish colour; over the shoulders hung long green hair; the tail resembled that of a seal, but the extremities of the arms he could not see distinctly. The creature continued to make a musical noise while he was gazing, for about two minutes, but, on perceiving him, disappeared in an instant. Immediately the man saw his officer, he told this wild tale, which was of course doubted; but to add to the weight of his testimony, (being a Catholic,) he made a cross on the sand, which he kissed, in form of making oath to the truth of the statement. Captain Weddell afterwards swore him to the facts, on the Gospels, with a paper cross under his hand.

Captain Weddell's observations on the native Fuegians are highly interesting. He appears to have taken great delight in closely observing their economy; for that word seems best to express the usages of these poor savages. But we are forgetting the Chanticleer.

Captain Henry Foster, commander of the Chanticleer, having completed the observations entrusted to him, and being about to return to his native land, accidentally fell from a canoe, in the river Chargres, in the Gulf of Mexico, and was thus lost, as the monument erected to his memory expresses it, "to his country and his friends." The objects of the voyage were entirely scientific; the principal one was to discover, by pendulum observations made at various places in the northern and southern hemispheres, the true figure of the earth. It is, however, solely for the sake of transferring to our pages some of Mr. Webster's observations in Natural History, that we have introduced his narrative to the readers of the *Entomological Magazine*. We shall take these memoranda as they occur, without attempting any thing like a classified arrangement.

On the 23d May, the surface of the sea was covered with very minute particles of something which appeared like dust, or the shakings of hemp. Having obtained some of it in a vessel, on examination Mr. Webster found it to be composed of very small worms, extremely slender and delicate, and about the hundredth part of an inch in length. They were of a brown colour, in general, and acuminate at each extremity, having also a slight bending motion at times. Besides these, the water from which they were taken contained a few hairy globules, about the size of a pin's head, which opened and contracted, having a bright glistening speck in their centre. There were, besides these, some little red capillary worms, bifurcated at one extremity, and some *medusæ* of a chocolate colour, about the size of a pea.

We heartily wish Mr. Webster had been somewhat more full in his description of the hairy globules: we fain would know whether the glistening speck was visible when the animal was contracted; and again, whether the "opening" of the animal could be caused by agitating the water. Presuming that the luminous speck was only visible when the animal opened; and presuming, also, the opening could be caused by agitating the water, we have, at once, before us, in this hairy globule, the immediate cause of that luminosity of the ocean which exhibits itself in evanescent sparks, as the waves dash against a vessel's prow.

On the night of the 30th May the voyagers were much gratified by a phenomenon of rather uncommon occurrence, relating to the luminosity of the sea. It was about ten at night, when the vessel was sailing through the water at the rate of five knots, the weather clear, and the stars shining brightly above them, when their attention was suddenly attracted by a great number of dolphins sporting round the ship, and darting about in all directions with the swiftness of an arrow. The water was extremely brilliant, and appeared to be a sea of stars, so numerous were the specks of light. But, beautiful as was this appearance, (they having become, in some degree, accustomed to it, from having witnessed it on former occasions,) their attention was now principally directed to the dolphins. They could distinctly see their whole form to a considerable depth below the surface of the water, from the bright light which they emitted, and were delighted with their

gambols. A train of vivid light, not unlike that left by a rocket in its flight, but more continuous, suddenly appeared, and marked the dolphins to be in pursuit of prey.—Vol. i. p. 19.

On the 12th June, in latitude 6° N., Mr. Webster found the sea again covered with the dust already spoken of; but on examination, it exhibited no symptoms of animation. During the long calms by which they were delayed in the vicinity of the equator, Mr. Webster had frequent opportunities of examining several kinds of *medusæ*, or sea blubber. One day, while several of the crew were bathing in a sail secured for the purpose, by the side of the vessel, several of them were severely stung by these *medusæ*; and the carpenter was so much injured by them, as to be unable to swim: he suffered much pain and irritation from them, but nothing further. Mr. Webster frequently handled them; and, on afterwards applying his hands to his lips and face, experienced pain, which he considers proceeds from the secretion of an acrid matter, rather than from any electric property. He contracted a disease in his hands, much resembling the itch, in consequence of handling these *medusæ*, and the *physalis*, or Portuguese man-of-war.—Vol. i. p. 22.

On arriving on the coast of South America, the tree-ferns on the Corcovado, a mountain in the neighbourhood of Rio Janeiro, attracted Mr. Webster's attention: they may be classed amongst the most elegant productions of the vegetable kingdom. These ferns grow to the height of twenty feet, and are frequently entwined with lesser ferns; thus clothing their stems with all the elegance of ivy. The anvil bird perches on the branches of these tree-ferns, and repeats its singular note, which sounds like the blow of a hammer on an anvil. The beauty of plumage which forms the peculiar feature of the birds of Brazil is well known. Nature may, truly, be said to have lavished her favours in decking out the feathered tribes of these regions, for they are all remarkably handsome, and objects of admiration to every visiter. The insects are equally magnificent, particularly the butterflies, many collections of which are sent to Europe. Fireflies, beetles, and grasshoppers, are abundant: the webs of some of the spiders are strong enough to entangle a little bird; and ants are so large that they are fried and made into a delicate dish. Snakes are very common and plentiful; every variety of these creatures is to be had, from the boa-constrictor, of thirty-five feet in length,

to the little delicate green snake, which does not exceed four inches. Rio is tolerably supplied with fish. The shrimps are very large, and, when made into pies, are an excellent dish.—Vol. i. p. 51.

At Monte Video immense quantities of snails are sold in the markets, and are used for soup. The birds are remarkable for their beautiful plumage. The *Rhea*, or American ostrich, is common, both in a wild and domesticated state, and may frequently be seen bounding over the plains with remarkable swiftness. This bird lays three or four eggs in the month of October, which are to be had in the markets, and are used for domestic purposes; they generally weigh about a pound and a quarter each; and the country people make a custard of the yolk, which they bake in the shell among wood embers. Wild swans, vultures, owls, kites, kawks, parrots, woodpeckers, rose-breasted thrushes, and a variety of elegant finches, are common, besides the *Loxia cardinalis*, or cardinal-bird, so called from a tuft of feathers on the head. Game and fish are plentiful.—Vol. i. p. 91.

Our author gives a very detailed account of the natural history of Staten Island, situate near the extreme southern point of South America. Of mammalia he found there two species of seal, the otter, the rat, and the mouse. The penguins of different species, ducks, and the albatross, seem to have been the only birds. The rocks abounded with muscles and limpets. The mullet appears to have been the only fish discovered. In using the dredge, pieces of wood were frequently brought up, bored in every direction by the *Teredo navalis*, a worm varying in length from two to six inches, and from a quarter of an inch to an inch in circumference. It is pale white, smooth, and not annulated. The anterior extremity has a slender, double, extensile, cleft proboscis, or mouth-piece, which the creature has the power of thrusting forward to a considerable length from it. This proboscis is of a flesh colour, and finely pointed. From the neck or anterior portion of the body, proceed two plumated processes, which are firm and long, well articulated, and about two inches in length. These consist of a footstalk or pedicle, firmly implanted into the sides of the worm, and the other half terminated by a plano-convex doubly-feathered edge. The plane surfaces of these feathered borers are applied together, and, by a semi-revolution, work at first a small hole; till, getting

gradually larger, the whole feathered process enters. It resembles in some measure a very fine double-edged saw, working by half turns as it destroys the wood. It is frightful to contemplate the ravages which these creatures are capable of committing on ships; they would soon scuttle a first-rate man-of-war.—Vol. i. p. 124.

Early in December the water in the harbour at Staten Island was covered with *Medusa*, and on the following night a most brilliant illumination of the water ensued. On the external convex side of those *Medusa*, which Mr. Webster examined, were eight longitudinal rows of small imbricated processes, slightly curved, and acting as a series of little flippers, for they had the power of rapid motion, and appeared like the delicate cogs of a small wheel. When desirous of moving, several or all these flippers were put in motion, and thus the animal could proceed with great rapidity; the motion of the flippers imparting to them a succession of beautiful colours, green, rose colour, gold, crimson, blue and purple. The moment the motion ceased, the colours were no longer perceptible.—Vol. i. p. 126.

From Staten Island, Captain Foster sailed southward, to the group of islands known by the name of South Shetland, and anchored in a cove or basin within Deception Island. This island, and indeed even the description of it, must be a treat to the geologist. Although it is twenty-seven miles in circumference, it bears every appearance of having been the summit of a volcano, abounding in ashes, &c.; it consists of a circle of rocky hills, united excepting at one point, and enclosing a large harbour or basin, which occupies nearly the whole of the interior. The number of objects in natural history found here was very limited; the only mammalious animal mentioned, is called the sea-leopard, a species of seal, nine feet in length, five feet in circumference, and in weight eight hundred pounds. Among birds, the voyagers saw myriads of penguins, two species of tern, the black-headed gull, the stormy petrel, and two other species of *Procellaria*; the *Pelicanus graculus*, or blue-eyed shag, and the *Vaginalis alba*, or Cape pigeon; the last mentioned appeared merely to have accompanied the ship, and not to have been an inhabitant of the island. There were plenty of a small species of shrimp, but they were not fit to be eaten, and a small lizard-tailed

star-fish was numerous. There was also a very handsome species of *Echinus*. There was not a single phænogamous plant,—but one moss, one striped coralloid lichen, and a few uninteresting sea-weeds. The climate is excessively cold, and the ground covered with ice and snow even in summer.

From Deception Island, Captain Foster returned northward to Cape Horn and Hermite Island. Here no mammalious animals were noticed; there were no penguins, and but few other birds, and very few fish.

The little Chanticleer now shaped her course across the Atlantic, and reached the Cape of Good Hope on the 27th of June, having performed the passage in twenty-seven days; a great number of birds, particularly the graceful and elegant pintadoes, accompanied her throughout the passage. In Mossel Bay, our author was struck with the variety of shells, and the beauty of some of them, particularly that of the paper *Nautilus*. He also mentions the following genera: *Haliotis*, *Trochus*, *Buccinum*, and *Pholas*.

ART. LI.—*Proceedings of the Entomological Society of London.*

SITTING OF THE 2d OF JANUARY, 1837.

Rev. F. W. HOPE in the Chair.

THE minutes of the last meeting were read and confirmed.

Mr. RADDON exhibited a drawing of the turnip leaf, with two Lepidopterous ova deposited thereon, which had been reared, and turned out to be, the one *Leucophasia sinapis*, and the other *Plusia gamma*. He stated, that a friend of his had discovered the undoubted larva of the turnip fly, feeding between the Epidermis and Parenchyma of the leaf, which obscure habit rendered it so difficult of detection. He hoped to be able to forward to the Society more complete information, in detail, from his friend, than he was then in possession of. He exhibited a series of phials containing various foreign larvæ, &c., found in turpentine, and extracted therefrom by

means of strong spirit of ammonia; and also a pan containing the insects in the turpentine in the rough.

The PRESIDENT, in some subsequent observations, confirmed the great success of this method of obtaining many foreign insects, stating that some of the finest specimens he had seen in any European cabinets had been procured in this manner, and a fine North American cabinet might thus be obtained for a few pounds, and without stirring from our own firesides. He recommended spirit of caoutchouc as a solvent.

Mr. RADDON further mentioned his success in obtaining insects from a gum, which he believed to be copal; but which the President doubted, never having known any authenticated instance of insects found in that gum, but always in gum animè, which received its name, originally, from the great number of ex-animated remains found in it.

Mr. RADDON next exhibited a phial containing hymenopterous and other insects, sent over in rum from the Gambia, which he recommended as by far the best mode of transmitting all insects, excepting Lepidoptera, from abroad; and, as a proof, displayed some of the most delicate specimens taken out and set, which were as brilliant and perfect as if just captured.

Mr. WATERHOUSE bore testimony to the safety and excellency of this method of transmitting foreign specimens.

Mr. RADDON, lastly, exhibited two specimens, which he forbore to give any name to. They *had been* Lepidoptera, but were completely eaten up by a fungus.

The PRESIDENT remarked, that a wasp's nest had been exhibited in that room with some of the wasps in a similar predicament.

A very interesting paper by Mr. Sells was read, on the *Cteniza nidulans*, the trap-door-making spider of Jamaica. He exhibited a perfect specimen of the insect, with some beautiful drawings of its curiously-constructed nest.

Mr. MACLEAY confirmed the accuracy of Mr. Sells' description, from his own personal observation, and mentioned the existence of a spider of similar habits in India and the South of Europe.

A paper by Mr. Waterhouse, containing further descriptions of insects, collected by Mr. Darwin, was read; specimens of the insects, principally *Altica*, were exhibited: one of these Mr. Westwood considered nearly identical with

our turnip fly, and he stated it to be equally destructive in New Holland.

Mr. WESTWOOD read a curious and interesting paper by himself, on caprification; an operation by which certain Hymenoptera of the family *Cynips*, after undergoing a very remarkable gradatory process, performed an essential part in the ripening of the garden fig, by piercing the immature fruit, and thus occasioning an excitement of the juices, and a precocious maturity of the fruit, as is frequently the case with our own fruits that have been attacked externally by insects. The peasants, in some of the Greek islands, are perfectly aware of this curious economy of the insects, and watch the development of the mature insect daily, for the purpose of assisting nature, and conveying the little operators, which are bred in the fruit of the wild fig-tree, to the fruit of the garden fig, if, from any cause, they should not be strong enough to effect the transport themselves;—by which means they frequently obtain fine crops, when otherwise there would be a failure. A double crop is likewise obtained by the same means, but is considered to deteriorate the fruit. Drawings of these insects accompanied the paper.

ANNIVERSARY SITTING.—JANUARY 23, 1837.

Rev. F. W. HOPE, President, in the Chair.

Minutes of the last meeting were read and confirmed.

The meeting then proceeded to the customary business of the election of officers for the year ensuing. Four members were recommended by the Council to be removed, and four to be elected into the council in their stead. The ballot having been taken, the Chairman declared, upon report of the Scrutineers, that the election had unanimously fallen on the following gentlemen, viz.: Messrs. Bennett, Children, MacLeay,* and Waterhouse, as members of the Council; J. F. Stephens, Esq., as President; W. Yarrell, Esq., Treasurer; J. O. Westwood, Esq., Secretary; and W. E. Shuckard and J. O. Westwood, Esqrs., as joint Curators.

The TREASURER presented his account for the past year, signed by the Auditors; from which it appeared that the funds of the Society were in a prosperous condition, there being a

* Mr. MacLeay has since resigned.

considerable cash balance in hand, and large assets due to the Society, while every current claim whatever had been discharged.

The PRESIDENT, in his concluding speech, enlarged upon the very flourishing state of the Society, forty-four members having been added to it during the past year, while only four resignations had taken place; and he was happy to say no loss had occurred from death. Sixty-three publications had been presented to the Society in the course of the year, including many from Literary and Scientific Societies. He lamented, at considerable length, the loss the science had sustained in the death of Dr. Leach. He enlarged on the great service that had been rendered, in the preservation of the beautiful park of Brussels, from hints given by one of the members, (Mr. Spence;) and deprecated the conduct of our own Commissioners of Woods and Forests, who appeared to listen to the advice of interested timber-speculators, rather than to such as would arrest the ravages of the same insect, now rapidly proceeding with the work of destruction in Kensington Gardens. He finally recommended a MS. account to be kept of all Entomological publications.

The speech was received with much applause, and ordered to be printed.

The usual votes of thanks were then passed.

The SECRETARY announced, that the Council had agreed upon "*Athalia centifolia*, or the Blacks of Turnips," as the subject of the prize essay for the year 1837.—None had been received on the *Coccus* of the pine apple, the subject proposed last year.

The Third Part of the Transactions of the Society, being the completion of Volume I., was laid upon the table.

SITTING OF THE 6TH OF FEBRUARY, 1837.

J. F. STEPHENS, President, in the Chair.

After the usual business had been gone through, a black letter volume was exhibited, with an accompanying letter from Mr. Bohn the bookseller, presenting it to the Society as a matter of curiosity, being rendered of no value to him by the perforations of the little insect that attacks books, which had

all been done within the last twelve months. The letter stated, that the discovery of a mode of preventing these attacks, would be the means of saving many a rare and valuable book to the amateur and the trade. On examination, three species of insects were discovered; one, the usual *Anobium*; another, *Lepisma saccharina*; and a third, apparently, the larva of an *Aphis*. Prussic acid, corrosive sublimate, quassia, and the oven, were severally recommended by different members, to destroy these pests of the biblioplist.

The Rev. F. W. HOPE stated, that it was principally books coming from abroad, and which had been injured by salt water, that were subject to be thus attacked.

A paper was read, descriptive of the various genera and species of Coleoptera, found in the neighbourhood of Penzance, by Mr. Howe. Two of the specimens exhibited were pronounced to belong to exotic genera.

The Rev. F. W. HOPE read some observations on the economy of Ants. He traced the authorities from Scripture, downwards, and quoted many passages from the classics, to prove the general belief in their provident economy; which, however, had been questioned by many modern entomologists. To settle that point, he proposed several queries, more particularly directed to ascertain the food of exotic species, and whether, or not, they were torpid during any part of the year in the tropics. In the discussion, much reference was made to a communication from Col. Sykes, published in the Transactions of the Society, which Mr. Hope considered to establish the prevalent opinion of their provident habits, but which Mr. Westwood contended did no such thing; and, also, that the ancients were not entitled to any weight as observers of natural history.

SITTING OF 6TH MARCH, 1837.

Rev. F. W. HOPE in the Chair.

Minutes, &c. &c. of the previous meeting, were confirmed.

A specimen of *Cerura vinula*, found imbedded in a solid piece of pine, was exhibited.

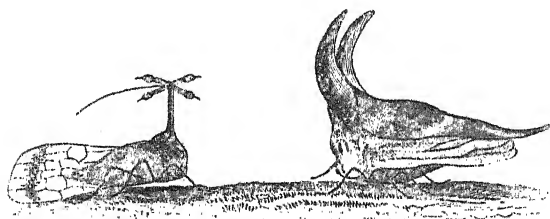
A letter from Mr. Petit was read, noticing a decoction of staves-acre root (common larkspur) as a remedy very anciently

employed for the destruction of vermin infesting either animals, or the habitations of man.

A paper, containing some further remarks on the curious construction of the nest of *Cteniza nedulans*, by Mr. Sells, was read.

A paper by the Rev. W. F. Hope, was read, in reference to a passage in Kirby's Bridgewater Treatise, wherein the insect that infested the Egyptians in the plague of flies, is supposed to be the cock-roach. The author expressed his deference to Mr. Kirby; but on this point contested his opinion as unnecessary and unsupported. He cited many authorities for the prevalence of several descriptions of fly in Egypt in the present times, and concluded that there was no reason for supposing that the insect designated by the Hebrew words in Exodus, was a *Blatta*, or otherwise than a proper fly. In the discussion on this paper, several members stated, that the cock-roach attacked man in tropical countries, by night, at the extremities.

The CHAIRMAN announced that he had in preparation a paper, which he hoped to have ready by the next meeting, on the insects found alive in the human subject, and should be much obliged by any facts or assistance thereon.



THE
ENTOMOLOGICAL MAGAZINE.

JULY, 1837.

ART. LII.—*Wanderings and Ponderings of an Insect-Hunter.*

(Continued from p. 203.)

CHAPTER XI.

[The Insect-Hunter taketh a view of Lemster from Eaton-hill.]

IT is sweet, it is very sweet, to stretch one's self at full length on a hill top, in the early summer grass, while Summer is yet little more than Spring,—the brightly-green, quickly-grown, thyme-scented summer grass! It is sweet, it is very sweet, while thus prostrate, and propping up the physiognomy between the hands to gaze forward on the summer earth, or into the summer air! It is sweet, it is very sweet, to watch the varied and ever-varying insect tribes as they mount to the tips of the individual blades from the more secure hiding-places about the roots and on the ground,—some beaten down by the morning shower,—some making their first pilgrimage after a winter's sleep in the deathlike chrysalis! It is sweet, it is very sweet, to watch them as they plume their antennæ, and stretch out their tiny wings, waiting a moment, as in coy hesitation, then essaying, fearfully at first, their newly-acquired powers, rise and float upon the balmy summer air. Mark that black bee, of all vagabonds the happiest, how she revels in the ground-ivy, which appears wherever the grass is more thinly scattered; with what joyous eagerness she hums from bloom to bloom, followed by her attentive mate, so different from

herself in colour! Mark that *Bombylius*! what words can tell the wondrous powers of his flight! poised on wing, painfully murmuring,—a murmur never to be mistaken,—he seems part and parcel of the air, too gross, indeed, to rise, yet too ethereal to fall; like the coffin of Mahommed, he is suspended motionless betwixt the heavens and the earth: attempt to catch him, and he is off at viewless speed; in a minute he has returned, and is again poised in air before me, near the place from whence I frightened him: he now descends, and after a most elaborate scrutiny, selects a spot on which to settle: there he sits bolt upright, his spotted wings still vibrating, though not so rapidly, as in flight.

Farther down the hill, the swallows and sand-martins are entomologizing; they sweep along the surface of the grass, picking off the insects that have mounted in preparation for an aerial wandering: each blade and each bent that bears a living being is robbed of its load; ever and anon a bird, more eager than the rest, dips deep into the grass for some glittering creature that has caught his beaming eye, and is for a few seconds wholly lost to sight. In the morning there was rain, and the gauze-winged nations were beaten to the earth, and the swallows gave up their labours as useless; but now the sky is cloudless, the air warm and still, and the insects have again emerged from their hiding-places; and as they prepare to wander, the hungry swallows, more hungry from their morning's fast, sweep with untiring wing over the surface of the earth, and arrest the progress of myriads at the very threshold of a happy flight.

The Insect-Hunter is looking from Eaton Hill down upon the valley of Lemster, and upon the course of Lug and the course of Oney, and upon the town, and the Etnam-street, and the old blue-roofed church, and the Priory, now, alas, the parish poor-house. On the left rise the well-wooded and often-hunted heights of Brierley; above Brierley, and stretching boldly forward to an abrupt headland, is the black, bleak, and barren West Hope; above and beyond West Hope is the beautifully fir-clad Foxley; and again, above and beyond Foxley, the Black Mountain, in all its gloomy grandeur, bounds the view; the superior and more distant height of Pen-y-Cader-Vawr, near Talgarth, just peeping in one spot above the level back of the vast mountain. Jutting out beyond the Black Mountain, to the right, but of far inferior height, is the baronial

Kewsop,^a and above Kewsop the bifid head of the mighty Beacon at Brecon looms in the distance. Farther to the right, but much nearer to the beholder, is the British encampment of Croft Ambery, oft visited by the Insect-Hunter. Still farther to the right, the sharp, abrupt bluff of the gigantic Clee frowns over the fair scene beneath. A motley multitude of minor hills complete the landscape. It is sweet, it is very sweet, to gaze on such a scene,—the outline of the ever-during mountains is as the countenance of a long-loved friend.

CHAPTER XII.

[Treatise of the Waters of Lemster and the course of Lug.]

Impressed with the deep importance of his subject, the Insect-Hunter must assume a somewhat severer diction than has characterised his lighter labours. The waters of Lemster are seven,—Humber, Cheaton, Ridgemoor, Lug, Oney, Arro, and Stretford Brook. The inhabitants of Lemster invariably speak of their streams in this mode, the definite article so commonly used before the names of rivers being justly considered superfluous. Some say that this usage of the Lemstrians arises from the elegant, refined, and poetic taste, universally acceded to them; others, less indulgent, insinuate that the small value of the streams, in a commercial point of view, none of them being navigable,^b induces the laconic phraseology. As rather favouring the latter opinion, it may be observed, that the principal streets, and the marts where money is made, are almost invariably spoken of with the definite article prefixed, as “the Bargates,” “the Poplands,” “the Etnam-street,” “the Draper’s-lane,” &c. &c. The Insect-Hunter must not presume to theorize on such an intricate subject as the origin of these customs, but leave the important inquiry to the resident and enlightened Lemstrians, a race of men alike eminent for the liberality of their views and the variety of their attainments.

^a Also spelt Kewstope.

^b An Act of Parliament was passed in the fourteenth year of the reign of Charles II. “to open and improve the navigation of the river Lug in Herefordshire.”

The seven waters or streams of Lemster eventually merge in one, now called Lug. The earliest name we find for this highly important and picturesque river is Llug-Gowy; we subsequently trace it through these various etymologies,—Llugowy, Llugwy, Lugwy, Lugge, and Lug. I will now endeavour to trace the course of this stream: whether this be more correctly done upwards or downwards I know not; but as more becoming so modest a hydrographer as myself, I shall begin at the little end, and so float downward with the current. The Lug rises in Radnorshire, eleven miles N.W. by W. of Presteign, at a place called Pool Hill; it flows by Lea Hall, crossing the road leading toward England at Llangynllo, then by Upper and Lower Weston, and Dole; then, after turning Mynaughty Mill, it passes under the road from Pen-y-bont to Knighton; hence it accompanies the road to the south, or right, for four miles towards Presteign, then crosses the road, and accompanies it to the north, or left, passing north of the town of Presteign, and crossing the two roads leading thence to Knighton and Lentwardine; then through Upper, Middle, and Letch Moors, under Rosses Bridge, by Kinsham, under Deerfold Bridge, to Shirley; then under Lyepool Bridge, by the Vallets, and under a bridge in the village of Aymestree, on the road from Lemster to Lentwardine; hence to Mortimer's Cross, the supposed field of a York and Lancaster battle.^c The Lug now passes under the road leading from

^c I say "supposed field," because there appears no proof whatever of the fact; some of the enlightened Lemstrians, however, thought otherwise, and from Grafton and Stowe, or perhaps some copier of these authors, they contrive to extract the following particulars, which, by subscription, they caused, a few years since, to be engraved on a pedestal erected near Mortimer's Cross:—"This pedestal is erected to perpetuate the memory of an obstinate, bloody, and decisive battle, fought near this spot, between the ambitious houses of York and Lancaster, on the 2d day of February, 1460, between the forces of Edward Mortimer, Earl of Marche, afterwards Edward IV., on the side of York, and those of Henry VI. on the side of Lancaster. The king's forces were commanded by Jasper, Earl of Pembroke. Edward commanded in his own person, and was victorious. The slaughter was great on both sides, four thousand being left dead on the field; and many Welsh persons of the first distinction were taken prisoners, among whom was Owen Tudor, great grandfather to Henry VIII., and a descendant of the illustrious Cadwallader, who was afterwards beheaded at Hereford. This was the decisive battle that fixed Edward IV. on the throne of England: he was proclaimed king on the 5th of March following. Erected by subscription, 1799." In this inscription there is scarcely one point wholly correct. The battle was not fought, at least we have no evidence that it was, near this spot;

Mortimer's Cross to Croft Castle, then by Kingsland, turning Kingsland Mill, it runs to the weir above Croward's Mill. Since the construction of this weir, the main stream runs in nearly a direct line to the town of Lemster; this course has all the appearance of being artificial, the original bed of Lug being the stream separated at the weir, and known by the name of Kenwater; the stream thus divided flows through the town under two separate bridges, and again unites near the Poplands turnpike, on the Ludlow road. About two hundred yards below this, the Lug receives the united waters of Cheaton and Ridgemoor, and then pursues its serpentine course by the Easters and through the Midsummer Meadows, passing under the London road at Eaton Bridge, one mile from the town of Lemster; immediately afterwards it receives Oney, and a mile lower, in the Volca Meadows,^d the waters of Arro also become tributary; it now accompanies the Hereford road by Wharton Court, running under Ford Bridge, and also a new bridge on the Ledbury road, to Hampton Park, then at the back of Hampton Court, the residence of Mr. Arkwright: it here receives Humber, and then takes a fine turn round Dinmore Hill, running under the bridge at Bodenham, and again comes nearly to the Hereford road, under Laston, Moreton, and Wergins Bridges; then through Lug Meadows, under Lug Bridge, where it turns a flour-mill, and by Bainton Wood, Tidnor Forge, Court Farm, where it receives the river Frome, and Hampton Bishop to Mordiford, where it falls into the Wye.

The course of Lug is explained.

the day, the month, and the year of the date, are incorrect; the number of men killed is not so given by any historian; and the victory did not fix Edward IV. on the throne of England, or the dreadful battle of St. Alban's, which was previous to his accession, would not have been subsequently fought, nor would the house of Lancaster have been then triumphant. Cadwallader was never beheaded, as far as I can ascertain, although Owen Tudor was. Speed has thus described the battle in question. "Upon the virge of this shire, betwixt Ludlow and Little Hereford, a great battail was fought by Jasper Earle of Pembroke, and James Butler, Earle of Ormond and Wiltshire, against Edward Earle of March, in which 3800 men were slain. The two earles fled and Owen Teuther taken and beheaded. This field was fought on the day of the Virgin Marie's purification in anno 1461: Wherein before the battail was strok appeared visibly in the firmament three sunnes, which after a while joyned all together, and became as before; for which cause (as some have thought) Edward afterwards gave the sunne in his full brightness for his badge and cognizance."

^d The Lemster race-course.

CHAPTER XIII.

[Legends of Lug.]

It may possibly be remembered by some of my readers, that in a former part of this narrative the Grouse-shooter, (now, alas ! no more) the Cynophobist, and the Insect-Hunter, are represented as sitting on the summit of the Black Mountain and communing together : further, that the Grouse-shooter then and there narrated the history of the Monster of Mordiford ; and further still, that the Insect-Hunter deferred the publication of that history to a more convenient and appropriate time ; that time has now arrived, and together with the history of the Monster of Mordiford, the Insect-Hunter will now present to his readers two other histories equally instructive.

A great deal may be said or written very sensibly, (and withal very argumentatively, conclusively and satisfactorily, to the speaker or writer,) on the impropriety of introducing into a strictly veracious narrative, legends which are not attested by witnesses in whom perfect confidence can be placed ; but in reply to orations and essays on this subject I would say, in the first place, that I do not record these matters as facts, but as fables. I would say, secondly, that the fables connected with a particular spot are to be reckoned as portions of its history, they are the peculiar property of that spot, and were they passed over unnoticed an evident injustice would be done. There are few legends, moreover, that are not founded on fact, actually based on truth ; it is the sad propensity to exaggeration seemingly inherent in man that has so altered them that their pristine form is wholly lost ; this spirit of exaggeration is universal. It is but a few weeks since a poor man came to a most melancholy end, by the locomotive engine on a railway passing over him. The penny-a-line men were instantly at work ; the accident was recorded in every paper ; the cause was in every instance stated to be the bursting of a boiler, the lowest number of persons killed was stated at " nine ;" the highest at " nearly a hundred, besides many so seriously injured, that we regret to state there is little prospect of their recovery." Yet mark this ! an *accident* did happen, and a *steam* accident, and a man was *killed* ; the wild statements and maudlin regrets of the scribes were therefore based on truth.

In the same way do fictions of the most marvellous kinds rise out of facts. Fact is the source, the clear well-head of the stream, fiction is the mud that afterwards defiles it. Fact is more abundant, more fertile, indeed, more amusing than fiction. With regard more especially to local legends, the learned antiquarians, though foiled in all attempts to strip them of their fictitious garb, are yet often glad to consult them, as giving a decided clue to an obscure etymology, or a doubtful site. The Insect-Hunter may refer to Leland, Speed, Camden, Baker, Smollett, Rapin, and others, as his authorities, and also to several residents, who can bear witness that these legends have been handed down from generations long forgotten, and many persons will be found still living, who speak of them as of matters of fact.

Legend the First.

The Monster of Mordiford.

Once upon a time there was a great dragon lived on a hill near the town of Mordiford. His body was covered with bright scales, which shone like burnished brass, and the scales were so hard, that no weapon could pierce them; his teeth were a foot in length, and as sharp at the points as needles, and there were three hundred and fifty-two in each jaw. The claws of his feet were bent, and as long as a mower's scythe; his eyes were as large as a man's head, and shot forth flashes of lightning which killed whatever they struck; his breath was a flame of sulphur, and killed every beast that breathed it. He devoured all the sheep and the lambs, all the cows and the oxen, and the horses, and all the sows and the pigs, and hundreds of men that worked at the farms on the hill. He glanced at them with the lighting of his eye, and slew them and devoured them: of the cows and the oxen and horses he made two mouthfuls each, and of the sheep and the lambs, and the sows and the pigs, he made one mouthful each.

Great rewards were offered to any one who would undertake to kill this monster, and a great many men went out well armed against him, but the monster first slew the men with his eye, and then ate them with his mouth. It so happened that at this very time there was a notorious criminal under sentence of death in the jail at Hereford, for having cut off the ears of

his wife, and the nose of his wife's mother. Now this criminal said he would kill the monster, if the king would spare his life. So the mayor of Hereford sent for a priest, and ordered him to write a letter to the king, and to tell him of the monster and of the offer of the criminal. And the priest, wrote the letter and sealed it; and the mayor gave it to a groom, who rode eight days with it, and on the eighth night he arrived at Windsor, while the king was sitting at supper, eating a venison pasty, with the queen and his eight children, and two priests. When one of the priests read the letter to the king, he was much troubled, and he rose and left his pasty, and walked up and down the room, and he girt on a double-handed sword at his back, and took courage, and told the priest to write to the mayor of Hereford to allow the criminal to live if he would kill the monster. Then the priest wrote as the king commanded, and the groom took back the letter, and in seven days he arrived at Hereford, and gave the letter to the mayor.

The next day when the criminal was told that the king had agreed to pardon him if he would kill the monster, he provided himself with a gun with a very long barrel, and he loaded it with a bullet made of silver. He then bought an empty cider hogshead, and took out the head; and he put the cider hogshead in a waggon, and then got into the hogshead with his gun, and the head of the hogshead was again put in its place, and the criminal carefully concealed inside. There was a certain place at the meeting of the waters of Lug and Wye where the monster came down every day to drink exactly as the clock struck twelve: so the criminal directed that the hogshead, with himself inside, should be drawn in the waggon, and taken out and left at this place; and all this was done, and the man drove the waggon away.

Exactly at twelve o'clock the monster came down to drink, which the criminal knew by the hideous roaring, and also by the powerful smell of sulphur which oozed through the crevices of the hogshead, so he knocked out the bung, and thrust the barrel of the gun through the bung-hole. Then he saw the monster come up slowly out of the water and look about him for somebody to eat: and the criminal trembled with affright, but, recollecting the opportunity of saving his own life, he took steady aim at the monster's left eye, and shot him through the head. Then the dragon breathed forth a terrible stench, and

leaped in the air to the height of fifty-three feet, and fell on his back. His wings stretched out for a moment, quivered, and then folded over him, and he died. But the stench which the monster sent forth, came through the bung-hole of the hogshead, and killed the man; which shows very clearly that he should have taken the precaution to take out the bung from the inside, and instantly replace it when he had fired.

Legend the Second.

The Lion of Lug.

Merivald, or Merowald, or Merwald, or Merewalch, was king of Hereford, A.D. 625. This kingdom originally formed part of the great kingdom of Mercia, founded by Crida, A.D. 584, but was separated therefrom by Ethelred, in favour of his brother Merowald. Now Ethelred himself had no title to the kingdom of Mercia, but therein supplanted his nephew Kenrid, the son of Wolpher, the son of Penda. Merowald was a man of very good intentions, but it does not appear he had the honesty to act on them. He was always lamenting that his brother Ethelred and himself should usurp that which belonged to their nephew Kenrid, but he had not the honesty to give up even that portion which he himself held. His heart constantly wavered between avarice and generosity. Merowald held his court at Llednau, now Lemster,^a the principal town in his kingdom, and his mind was ill at rest. So he left his palace one night, and wandered down to the banks of Lug, and made as though he would have drowned himself in its waters. And he reasoned with himself: "Wherefore," said he, "do I hold a kingdom that is not mine? I will hold it no longer; yet will not turn out a beggar and a vagabond; I will die, and my kingdom will pass to its rightful owner." He stood on the river's bank. Then there was a loud rushing noise, and a huge lion came up out of Lug, and shook himself thrice, and came and stood before him. Merowald trembled with affright. Then the lion spoke and said: "Merowald, I know thy determination, and I come to turn thy mind to better things: thy

^a Leland says that king Merwald had a castle or palace on a hill-side by the town of Lemster. "The place," he adds, "is now called Comfor Castle, and there are to be seen tokens of ditches where buildings have been." The Insect-Hunter is not aware of the precise spot to which Leland refers.

life will be short enough, so hasten not its end. Kenrid shall rule over all Mercia; but go thou and build a house for religious virgins; and build it over the brook called Oney, so that the brook may flow through the house, and refresh it. Do this, and thy mind shall be at peace." Then the lion returned to the river, and Merowald went home to his palace: and he arose the next morning, and called together the masons, and the builders, and the drawers of plans; and he forthwith began, and he built a nunnery over the brook Oney; and from that day, the house was called Le-Oney-minster, and the town was known by the same name. When the religious house was completed, Merowald died, and his brother Mercelin succeeded to his kingdom. Mercelin died without issue, and the kingdom of Hereford was again united to the kingdom of Mercia. Ethelred, the king of Mercia, then resigned his kingdom to his nephew Kenrid, to whom it of right belonged, and retired to the monastery of Bardney, of which he became abbot."

Legend the Third.

The March of Marcley Hill.¹

There is in Herefordshire a hill called Marcley Hill; it is situate eight miles S.E. of Hereford, four miles S.E. of Lug at Mordiford, six miles N. of Ross, two miles N. by E. of the river Wye at How Caple, two miles N.W. of Much Marcle, nine miles S.E. of Malvern, and three miles S.W. of Little Marcle. It is a long ridge, running north and south, and forms part of a circle or amphitheatre of hills, which extend unto Stoke Edith on the north, unto Mordiford on the west, and unto Settler's Hope on the south; Marcley Hill and Seagar Hill constitute the eastern portion of the circle. Marcley Hill has wood land, and corn land, and pasture land.

¹ Camden, in his "Britannia," treats this history with disdain.

² In this instance I shall give the account of the wonderful movement of this hill in the words of Speed. I quote his "Theatrum Imperii Magnæ Britannię, imprinted at London anno 1610:" the event occurred in this author's life-time.— "Majoris vero miraculi vel admirationis, opus Dei Omnipotentis nostrā etiam memoriā, anno Jesu Christi 1571, illud fuit: cum collis quem Marcley Hill vocant, in hac regione, ad ortum, alto quasi somno solutus consurrexit, et horrido reboans mugitu, a loco ubi constiterat se promovit, ac triduum a priore sede sua magnō cum stupore attonituque spectantium timore progressus est. Inijt illi quidem hoc iter suum septimo Februarij, qui fuit Saturni dies ad sextam horam

It was at six o'clock in the evening of the seventh^s day of the month of February, in the year of our Lord one thousand five hundred and seventy-one,^h that the wonderful movement of this hill began to take place, and it was not till twelve o'clock at noon on the following Monday that the hill again stood still. The earth opened along the brow of the hill on both sides, with a mighty bellowing noise, which resounded along the earth and re-echoed in the air, and was heard at the distance of hundreds of miles; and then a huge rock heaved up from beneath more than twenty acres of the hill, and lifted it to a great height; and when it had so lifted it, the trees that grew upon it remained upright, and there were cattle grazing in the fields, and sheep in their folds. When it was lifted, it began to move forwards; and passing along, it came to Kinnaston Chapel, and threw it down, and crumbled it to atoms, and buried it. And it still pressed forwards, and tore up the trees in the fields, and destroyed the crops, and buried the cattle, and the horses, and the sheep: and two public king's highways were wholly buried beneath its mass; and they were afterwards made altogether afresh, in far different directions, more than three hundred feet from where they originally were. At last it stood still in its present situation, having marched forwards for the space of two-and-forty hours. And the gap from whence it first rose remained empty, and was forty feet in breadth, and more than four hundred feet in length.

vespertinam: ante septimam verò insequentis diei matutinam; quadriginta passus processerat, obvia quæque secum deferens et propellens, oves suis in ovilibus, sepimenta arboresque: quarum aliæ prostratæ feruntur, aliæ quæ in plano antea sitæ nunc in locum superiorem et ipsum montis clivum elatæ firmiter increscunt: quæ ad ortum positæ, in occasum versæ sunt; et vice versa, ab occasu in ortum permutatione facta translata. Quo quidem motu suo, Kinnaston Capellam funditus evertit, publicasque sive regias vias duas tercentum ferè pedes è consuetis suis tritisque tramitibus divertit. Solum ipsum quod hunc in modum iter (ut ita dicam) fecit; viginti plus minus jugera occupavit: quod sese aperiens cum saxeis Rupibus et quibuscunque intra suum ambitum perpetuo motu terræ molem præ se spatium mille ducentorum pedum protrusit: relictis post se arborum loco pascuis, arvisque pascuorum viriditate jam obductis. Tandem verò, obrutis prorsus inferioribus suis partibus, in molem surrexit, ad duodecim orgyiarum altitudinem, atque ibi post triduanum iter suum requievit. Specimen sanè et argumentum illius qui huic Rupì manum immisit suam, cujus potentia montes etiam et colles bilance sua libravit."

^s Sir Richard Baker, in his "Chronicles of the Kings of England," gives the 17th of February as the date, but still says it was Saturday evening.

^h Camden, in his "Britannia," dates this event 1575, but afterwards corrects this and substitutes 1571, the date given by Speed and Baker.

CHAPTER XIV.

[In which the Insect-Hunter treateth of the brook Oney, and of the Lady Pools.]

The brook Oney, like its companion Lug, rejoices in a variety of appellations; and we find its course laid down in all the maps, though in no two alike, and its title given as Oney, Pinsoley, Pinsoly, Pensoly, Pensilly, and Pinsley; but Speed, Camden, and all the best early authorities, call it Oney. This stream rises at Milton, to the west of Shobden Marshes, and runs through those marshes; and, south of Kingsland, forms the mill-head at Waterloo Mill, near Cobnash, and winds along the Kingsland meadows, by Walton's and Wegnall's, into the town of Lemster, through which it passes, flowing under an inhabited house, beside the Priory, or poor-house. It turns two flour-mills near the bottom of the Etnam-street, and then runs nearly in a direct line along the Midsummer meadows, passing under the London road, about a mile out of Lemster, and immediately afterwards falling into Lug, as before specified.

Although the extreme source of Oney, or Pinsley, as it is more generally called, is undoubtedly at Milton, a great portion of its water is derived from the Lady Pools, in Shobden Marshes. These are large basins, shaped like inverted cones, and of great depth, varying from thirty to forty feet; the largest is about twenty or twenty-five feet in diameter, but the margins are so unstable, that it is difficult to measure them with much accuracy. They contain water of the most brilliant purity, and their bottoms are covered with sand almost as white as snow, which is thrown up by the great force of the spring, and seems to be in a perpetual boil: the surface is perfectly calm, and without the least ripple.

The Insect-Hunter had frequently heard of the fame of these strange pools, and therefore determined to visit them. A company, consisting of the Cynophobist, and three industrious Insect-Hunters, was formed; and two gigs being obtained, the party started on a cloudless summer day, to examine these natural curiosities. We left our vehicles at a way-side public-house of humble pretensions, and, procuring a guide, were

quickly conducted to the marshes. The ground, in many parts of these marshes, is more than semiaqueous. Our guide had provided himself with a pole, nearly twenty feet in length; and demonstrated the nature of the substance on which we trod, by occasionally running its whole length into what appeared merely a puddle. On reaching the Lady Pools, we found them quite answer our expectations—rather a rare occurrence, when you have heard much in favour of any particular object. The description Southey has given, in his rhapsodical fiction of *Thalaba*, is so exceedingly accurate, that, although the *Insect-Hunter* is but little given to the practice of quoting, he cannot in this instance forbear:—

“ His aching eye pursued her path,
When, starting onwards, went the dogs;
More rapidly they hurried on,
In hope of near repose.
It was the early morning yet,
When by the well-head of a brook
They stopt, their journey done.
The spring was clear, the water deep,
A venturous man were he, and rash,
That should have probed its depths;
For all the loosened bed below
Heaved strangely up and down,
And to and fro, from side to side,
It heaved, and waved, and tost;
And yet the depths were clear,
And yet no ripple wrinkled o'er
The face of that fair well.

“ And on that well, so strange and fair,
A little boat there lay,
Without an oar, without a sail;
One only seat it had—one seat,
As if alone for *Thalaba*.”

It appears, from a note appended to this passage in *Thalaba*, that a similar pool exists near Bristol, about a mile from Stokes Croft. There is something very strange about these pools. The excessive agitation at the bottom, demonstrated by the boiling up of the sand, and the continual and rapid motion of luxuriant weeds, which grow from the sides—the mirror-like stillness of the surface—the extreme pellucidness of the water—the symmetry of the circular form, are all remarkable characters. In the most severe frost, they are never

crusted with the slightest covering of ice; indeed, ice thrown into them is rapidly melted. In warm weather—and it was a remarkably warm day when we paid our respects to them—the water is painfully cold. These facts as to temperature are, however, to be expected, seeing so great a volume of water, and probably from a considerable depth in the earth, is continually thrown up.

In the neighbourhood of these pools, and on the margins of Oney, the Insect-Hunter observed numerous tracks of otters. This animal is here a kind of game in much request, and is hunted by large wire-haired dogs, bred for the purpose.

CHAPTER XV.

[This Chapter treateth of the Priory.]

Reader, if the hydrography of Leominster prove uninteresting to thee, I shall be very sorry; but the remedy is in thine own hands. I recollect an old lady, who used to teach the rudiments of our vernacular tongue, unto whom, not being very profound in the science, it frequently happened that a word occurred, altogether beyond the power of tutor or pupil to decipher: the old lady would not then allow one to hammer at the word for half an hour, but would dismiss the intricate inquiry by saying at once, “Skip it, child! Skip it.” So, dear reader, if my stupidity leads thee to dose over the Insect-Hunter, I can only say, “Skip it, child! skip it; there is abundance of Latin further on.”

It has, I believe, been before stated, that the Priory is built over the brook Oney. Now, those who have visited many religious houses either in Britain or on the continent of Europe, will doubtless have observed, that a majority of them are thus accommodated with a stream of pure water, running, as it were, through their very hearts. We shall, perhaps, be able to throw a little light on this subject. In all ages, the members of the priesthood have regarded with infinite care the welfare of their own bodies and of others' souls; yet, without intending the slightest disrespect to the divines of 1836, I must in candour say, that I consider those of 1400, *et ante*, infinitely better versed in the science of gasterology. Gasterology appears,

for many hundred years, to have been their single study—the sole object to which their gigantic powers of intellect were directed. The opera did not exist—fox-hunting had never been dreamed of—games of chance were considered unclerical—what could they do? Is it surprising that the operation of eating became a science of the deepest interest? The object, then, of this close propinquity of running water was to preserve fish in living freshness, until the very hour they were required for the table.

It is best here to state, that some doubt has been thrown upon the historical account of the Priory having been built by Merowald, over the brook Oney; and there are those who state, that the present channel of the stream was cut by order of the monks, after their taking possession of this edifice, in the reign of Henry I., who, it is said, abolished the nunnery, in consequence of the sins of the fair sisterhood, and established this building as a priory, under the government of the celebrated monastery at Reading. Whoever will take the trouble to examine the course of Oney, from the town to its union with Lug, will think this conjecture far from improbable. We must not, however, forget that still greater praise is due to these scientific divines, supposing the conjecture correct; for it then appears, that they actually accomplished the laborious task of turning the course of a river, for the advancement of their favourite science of gasterology. What an example to its lukewarm professors at the present day!

The fact is obvious, that this exquisitely clear stream actually flowed under the kitchen of the Priory. On either side, above and below, there was, doubtless, as in a hundred other instances, a fine grating. Within the inclosure were preserved hundreds of that most exquisitely flavoured fish, the grayling; a fish still abundant in the stream. It is not, perhaps, generally known, that this princely fish has, when cooked immediately on being taken from the water, a taste and smell like a fresh cut cucumber: it is very seldom this treat can be obtained. The monks were perfectly aware of this quality, and of the great difficulty in availing themselves of it. They therefore contrived, by thus keeping a living supply of the delicacy as near as possible to the fire that was to cook it, to command the luxury whenever required. At a minute's notice the stone in the kitchen-floor was removed, the

landing-net introduced into the *receptaculum*, and the fish transferred to the gridiron. The Insect-Hunter has never partaken of a grayling cooked alive, and in truth, does not desire to do so: the delicacy is too *recherché* for a layman: but he can bear witness to the excellence of the Lemster grayling, and does not wonder at the trouble taken by the reverend gourmands to procure this luxury in its greatest perfection.

CHAPTER XVI.

[In which the Insect-Hunter speaketh of Fishing and Fishing-flies.]

It may be supposed that Lemster, seeing that its entire neighbourhood is so intersected with streams, must be essentially a fishing town. It is peculiarly pleasant to see the Lemstrians throw off the cares and toils of life, and issue forth on a calm summer's evening, to enjoy the luxury of fishing. I have often been delighted at the intense interest displayed in watching the float in its passage down the stream; had kingdoms depended on the result, the interest taken could not have been greater: it is, moreover, exceedingly pleasing to contemplate the content with which an angler will return home without even having had a single bite. It is no uncommon thing for men, much engaged during the day, to rise at three or four o'clock of a summer's morning, walk many miles to a favourite spot, fish whole hours without a bite, and return with beaming countenances and contented hearts, to the business of the day.

Although this is so completely a trout country, there exists a great prejudice against fly-fishing. It is occasionally resorted to when the grey drake¹ is on the wing; but even then very partially adopted. The banks of all the rivers are much overgrown with alder, whitethorn, and other shubby trees; and these are a very great annoyance in whipping with a fly, as the line is constantly getting entangled. I recollect an instance in which the feeling against fly-fishing was eminently called forth; Sir Humphrey Davy's delightful *Salmonia* was indignantly rejected by a Book Society, expressly because it professed to

¹ The grey drake is the imperfect imago of *Ephemera vulgata*.

treat of fly-fishing. The argument used was, that true fishermen always fished "bottom;" and, therefore, that Sir Humphrey did not understand fishing. Thus, it seems, that although an author may write never so pleasantly, and be a master of general knowledge, he must not hope to obtain a reading on subjects of such vast importance as angling; for those more skilful than himself are more qualified to teach than to learn: still, to the unlearned, Sir Humphrey's is a delicious book.

The grey drake is a fly after which trout are excessively greedy, and on which they get in excellent condition. It may, perhaps, be said, that this preference for the immature *Ephemera* is only ideal, and that the same insect, after having cast its last skin, would be equally acceptable, but that its flight is now so active, that it seldom has the ill-luck to fall in the water;—whereas, its sluggish, ill-sustained flight in the prior state makes it an easy prey. It is not unworthy of notice, that the *Ephemera* has a metamorphosis different from that of every other insect, and that this very difference causes it to become, as it were by wholesale, the prey of the scaly tribes. There are a variety of flies besides the grey drake, at which the trout rise eagerly; among these I may mention more particularly the pearl-flies and the stone-flies: the latter frequent the banks of the rivers in countless myriads: of an evening, when they are on the wing, the atmosphere is loaded with them. By day they rest on the alders and other trees by the river side; and, by a slight touch of his beating-stick, the Insect-Hunter has sometimes knocked hundreds into his net.

I have never yet seen an insect on the wing that possessed so elegant a flight as the perfect *Ephemera*, the white drake of fishermen. This common though beautiful insect is fond of company, seldom flying alone. It rises by an elegant movement of its wings, its slender triple tail being pendant and without motion: having mounted about four feet, it spreads its wings, and, holding them perfectly still, descends by its own weight to the spot whence it rose: in descending, the tail points upwards. Although words may describe the kind of flight in which this happy creature delights, the Insect-Hunter knows how vain would be his attempt to give any idea of its surpassing grace. He has watched for hours a company of these aerial dancers, and has never yet been tired of gazing

on them. The only object of the flight appears to be the enjoyment of the moment—it is the overflowing of that cup of happiness, which a great and beneficent Creator freely offers to all his creatures.

CHAPTER XVII.

[In which the Insect-Hunter traceth the course of Arro, and other minor streams.]

The source of Arro is unknown to me ; nor can I tell which of the various streams, uniting in its early course, is entitled to the name of Arro. A considerable brook rises in Glascwn Hill, and runs by Fualt, Dole-y-frau, and Llanyoyn, to Newchurch. Another stream flows out of Rhos Goch, a wet marsh, north of Clyro, and is called Cum Illa Brook ; this joins the Glascwn stream near Newchurch, and, from the junction, the stream is known by the name of Arro. From Newchurch Arro winds up a long valley to Kington, turning Milton's, Hale's, Hergest, and one or two other mills ; for three miles before it reaches Kington, it is accompanied by the road leading from Hay, which crosses it at Hergest Court, a mile and a half out of Kington. From Kington it runs N.E. to Staunton-on-Arro, turning two mills ; then S.E. to Pembridge, passing a quarter of a mile N. of that village ; then E. to Eardisland and Monkland ; at both places are bridges over it ; thence under a bridge between Newton and Ivington ; soon afterwards it receives Stretford Brook, and the united stream runs under Broadward bridge, a mile and a half S. of Lemster, on the Hereford road, and along the Volca meadows to its junction with Lug.

Stretford Brook rises near Sarnesfield, and passes near the ancient borough of Weobly, and thence through Stretford and Ivington to Broadward, where it joins Arro.

Ridgemoor Brook rises N. of Leominster, at Orleton common, and comes through Eye and Luston, and through the Portley Marshes, in a very direct line to Ridgemoor Bridge, one mile from Leominster, on the Lower Ludlow road.

Cheaton, or Stockton Brook, rises N. of Kimbolton, and, running by Stockton, joins another brook, which appears unnamed : the latter rises N. of Olden Barn, and runs S. by the

Brook Farm and Hennor; then turns N., taking the circuit of Eaton Hill, and joining Cheaton, falls into Ridgemoor at Ridgemoor Bridge; and the united stream immediately afterwards falls into Lug.

Humber rises near Bockelton, runs S.W. under the London road at Steen Bridge, four miles from Lemster; then S. by Risbury Camp, under the Ledbury road, four miles and a half from Leominster; and unites with Lug at Hampton Court.

The waters of Leominster are described.

CHAPTER XVIII.

[In which the Insect-Hunter talketh of Fish.]

A fish occasionally occurs in the waters of Lemster, which has given rise to considerable difference of opinion among fishermen; it is called the Samlet. Some insist that it is a yearling salmon; others as confidently assert that it is a totally distinct species. This fish was formerly found in considerable abundance, but is now so rare, that, although making continual inquiries, I have been unable to obtain the sight of a single one since the publication of Yarrell's *British Fishes*; and, therefore, have never had an opportunity of comparing it with the description and figure of the samlet in that work. Owing to some regulation by the proprietor of the fish lower down the Lug, the passage of the salmon has been stopped, or nearly so, and the capture of a salmon so high up as Lemster is now a very uncommon circumstance. Formerly, salmon used to be tolerably abundant, and averaged between five and six pounds in weight: those of a larger size than eight or nine pounds were always esteemed rarities; but there is on record an instance of one having been killed at Osborne's Mills, that weighed no less than thirty-two pounds. The simultaneous and almost total disappearance of both salmon and samlet, favours the opinion that they are one and the same fish; because, whatever means may have been taken to arrest the bulky salmon in their way up the stream at the season of migration, the same means would scarcely stop so diminutive a fish as the samlet. Salmon and samlet were more abundant in Lug than in Arro; in Oney, they were very rarely seen.

Trout are abundant in all the streams except Oney ; and, in this stream, they are not only comparatively rare, but inferior both in quality and size. There are two very different kinds of trout, as regards the colour of their flesh, some being very red, others nearly white ; intermediate shades of colour are uncommon. Whether, by a careful investigation, two species might be found, I am unable to say ; but it is the universal opinion of the fishermen, that there is but one. The trout of Arro are invariably of the red kind, and are finer in flavour than those of Lug. The redness of the Arro trout is attributed by the fishermen to the redness of the soil through which that river flows.

Grayling occur in all the streams, and are sought after with great avidity, on account of their excellence. Trout and grayling are taken by night in great numbers, with illegal nets, and are sold in the town the next morning : the price is almost invariably 10d. per lb., and the average weight of fish so sold is 12 ounces. The wives of the poachers carry the fish from door to door, and offer them for sale in the most open manner : the buyer never inquires how the women come by them ; he knows perfectly well that the ready answer would be, that they were taken with a rod and line—a sport perfectly open to all.

Pike are met with in all the streams except Oney, and even in this I have seen *one*. It was lying under the bank of the stream, in the Midsummer Meadows, not more than three hundred yards from the union with Lug. It was in the hay-making season : a countryman, with a fork in his hand, was passing, and it caught his eye. He crossed the stream to the opposite side, and, standing exactly over it, by a sudden stroke he ran his fork completely through the fish, and instantly brought it to land. It weighed two pounds and a half. Pike are much more abundant in the ponds than in the rivers, and attain a larger size.

Eels occur plentifully in all the waters ; in Oney they are particularly abundant : vast numbers are taken by night-lines.

Chub of large size—seven pounds and upwards—have been taken out of Lug. In Arro, Oney, &c., they occur, but of less size and less frequently : they are not uncommon in ponds.

Carp, trench, perch, roach and dace occur in all the ponds and streams ; in the latter sparingly : with the exception of

tench and perch, they are little esteemed, and, consequently, little sought after.

A large lamprey was killed in Lug many years ago; but this fish is usually very small, not exceeding 10 inches in length.

The miller's-thumb is abundant, particularly in the shallow streams with stony bottoms; the loche, minnow, and stickleback occur in the same situations. The stickleback is said never to have been seen in Arro; but this seems very unaccountable, and I am inclined to doubt the accuracy of the statement.

Gudgeon occur in Lug, but much more frequently in the canal. The canal also produces pike, carp, tench, perch, roach, dace, eels, minnow, loche, and miller's-thumb.

The fishes of Leominster are enumerated.

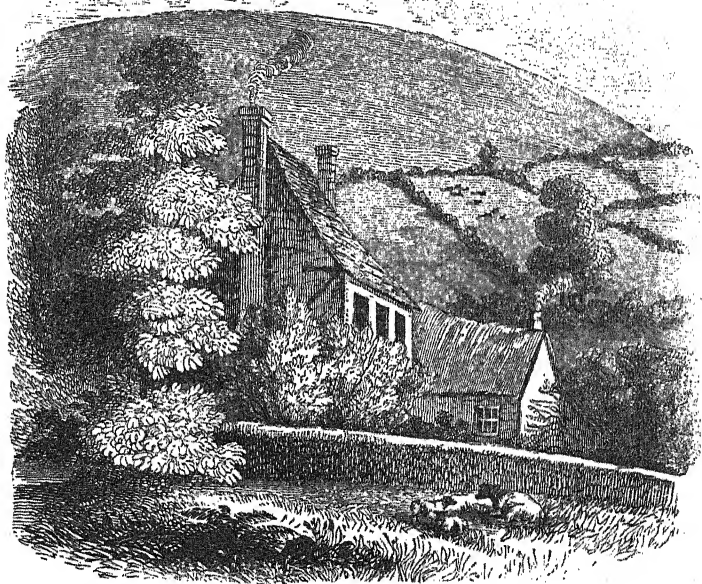
Preface to the Second Series.

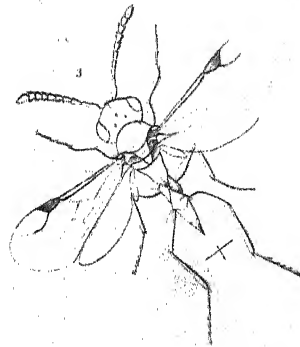
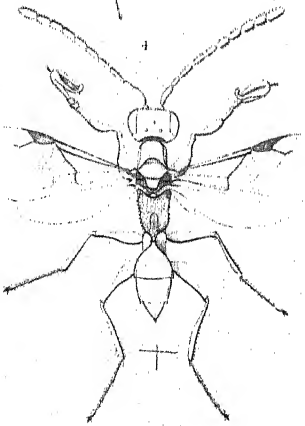
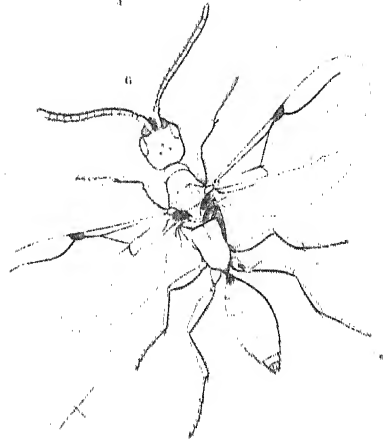
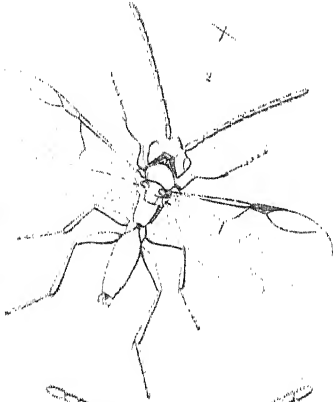
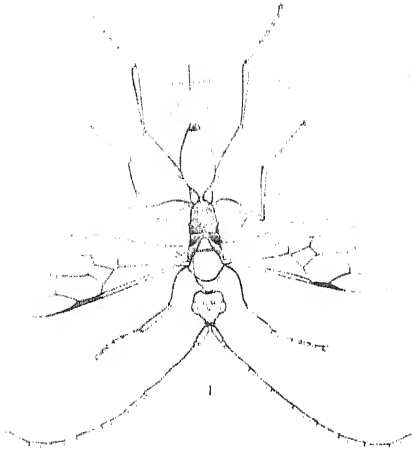
It is known to every book-writer, that the preface is the very end of his labours. Still, such is the mendaciousness of man, that he always places it at the beginning—the author of *Tristram Shandy* excepted, who veraciously places it where he wrote it—in the middle. I think it is rather new to put the preface at the end.

The reader, the courteous and gentle reader, of the *Entomological Magazine*, has observed divers wood-cuts, having no apparent connexion with the text: thus, a public-house was made to illustrate “Bowerbank on the Circulation of the Blood;” and a Quaker’s meeting-house embellished “Douglas’ Random Thoughts.” Now, although the sapients may attempt to prove, that public-houses cause a circulation of the blood, and that Quakers’ meeting-houses are places for random thoughts, be it distinctly understood that no conclusions of the kind were intended. Again, the residence of Thomas Rogers is to be placed at the end of this article, whether convenient or inconvenient, although that great man is yet in need of an introduction to my readers; moreover, in the next space an intended representation of the Needles, as seen from Alum Bay, is to be introduced. All these were designed by the Insect-

Hunter as illustrations of his "Wanderings." They represent very faithfully the objects from which they were drawn; although, in justice to the engravers, it should be stated, that they complained grievously of the want of composition in the drawings, and also of their being positively commanded to make exact copies without embellishment. In these respects, tastes widely differ. The Insect-Hunter likes faithful representations of all things. He would rather possess exact though homely likenesses of his friends, than more brilliant ones, nominally representing the same person, but modelled after the Venus de Medicis and the Apollo Belvidere.

But the Wanderer is wandering from his subject. The want of connexion between the cuts and the accompanying text is the difficulty before us; and that difficulty he hopes to obviate on a future, and, mayhap, not far distant occasion, by reprinting these chapters, with an illustrative cut at the head of each.





ART. LIII.—*On the Dryinidæ, &c.* By FRANCIS WALKER.

DRYINIDÆ, *Haliday.*

Metallæ lobatæ.

SECTIO I.

Caput longitudine latius : antennæ *mari* et *fem.* 10-articulatæ.

Genus DICONDYLYS, *Haliday.*

— DRYINUS, . *Latreille.*

— APHELOPUS, *Dalman.*

— LABEO, . . *Haliday.*

SECTIO II.

Caput longitudine vix latius : antennæ articulis *mari* 10, *fem.* 13 :
alæ areolatæ.

Genus EMBOLEMUS, *Westwood.*

SECTIO III.

“ Caput latitudine longius : antennæ prope os insertæ articulis numerum 10 superantibus : alæ disco exareolatæ.”—*Haliday, MSS.*

Genus EPYRIS, *Westwood.*

The name *Dryinidæ* should be confined to the first section. I have added the description of *Bethylus*, which has much external resemblance to *Epyris*, though it is one of the aculeate Hymenoptera.^a

SECTIO I.

Palpi maxillares	{	5-articulati	DICONDYLYS.	
		6-articulati <i>Fem.</i> propedum } maximi. .	DRYINUS.	
		ungues	minuti. .	APHELOPUS.
		3-articulati	LABEO.	

Genus DICONDYLYS, *Haliday.*

Corpus pubescens : caput magnum, transversum, breve, thorace multo latius, scite et conferte punctatum, parum nitens, supra impressum, postice concavum ; frons abrupte declivis : oculi ovati,

^a Ent. Magazine, I. 273, 276 ; II. 219.

extantes, maximi, capitis latera tota occupantes : ocelli approximati, vertice triangulum singentes : palpi maxillares 5-articulati : antennæ clavatæ, pubescentes, corporis dimidio breviores ; articulus 1^{us}. fusiformis, validus ; 2^{us}. sublinearis, brevis ; 3^{us}. longissimus ; 4^{us}. et sequentes sublineares, usque ad 9^{um}. curtantes et latescentes ; 10^{us}. apice conicus, 9°. paullo longior : thorax longus, angustus, convexus, subnitens, leviter rugosus, medio coarctatus ; discus fere lævis : prothorax magnus, mesothoracis latera antica amplectens : mesothorax longus, angustus ; segmenta fere in unum confusa : metathorax ovatus, magnus, altus, ad apicem tranverse sulcatus : petiolus brevissimus : abdomen ovatum, convexum, nitens, læve, glabrum, thorace latius et multo brevius ; segmentum 1^{um}. maximum ; 2^{um}. mediocre ; 3^{um}. et sequentia brevia : propedes longi, crassi ; coxæ magnæ ; trochanteres arcuati, longissimi ; femora incrassata ; tibiæ validæ ; tarsi lati, articuli 2^{us}. et 3^{us}. brevissimi ; ungues maximi, reflexi : meso- et metapedes simplices ; coxæ sat magnæ ; trochanteres breves ; femora valida, metapedum clavata ; tibiæ rectæ ; tarsi graciles, articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. paullo longior : ungues et pulvilli minuti : alæ nullæ.

Sp. 1. Dic. pedestris. Fem. *Ater*, caput subtus fulvum, antennæ basi fulvæ, thorax fulvo varius, pedes fulvi piceo varii. Pl. XVI. fig. 5.

Dryinus formicarius. Dalman, *Analecta Entomologica*, 14. 12.

Dryinus pedestris. . Dalman Kongl. Vetensk. Acad. Handl. för år 1818.

Dryinus bicolor. . Haliday, *Curt. Brit. Ent.* v. 206, 207.

Gonatopus sepsoides, oratorius et Ljunghii. Westwood, *London's Mag. Nat. Hist.* vi. 496.

Ater : caput antice et subtus fulvum : oculi et ocelli picei : antennæ nigrae ; articuli 1^{us}. et 2^{us}. fulvi ; 3^{us}. basi fulvus : pedes fulvi ; propedum coxæ piceæ ; femora picea apice fulva ; mesocoxæ piceo-fulvæ ; metacoxæ piceæ ; meso- et metapedum femora pallide picea apice fulva ; tarsi fusci. (Corp. long. lin. 2—2½.)

Var. β.—Propedum trochanteres flavi, femora nigro-picea apice flava, tarsi fusco cincti : meso- et metatarsi flavi apice fulvi : metapedum femora fulva, basi et apice picea, tibiæ apice fusca.

Var. γ.—Propedes fulvi, femora basi extus picea : meso- et metapedes fulvi, tarsi pallidiores apice fusci.

Var. δ.—Caput subtus fulvum : antennis articuli 1^{us}. et 2^{us}. flavi :

pro- et mesothorax plerumque fulvi: pedes fulvi: propedum coxæ et trochanteres flava, femora basi et tibiæ extus nigro-picea: mesofemora picco vittata; meso- et metatarsi pallidiores, apice fusi.

Found in Kent, by Mr. Haliday.^b June, Isle of Jersey.

Genus.—*DRYINUS*. Latreille.

Gonatopus, Klug. Anteon, Jurine.

Caput transversum, vix convexum, non impressum: oculi ovati, mediocres, laterales: ocelli 3 vertice triangulum fingentes: mandibulæ oblongæ, angustæ, subarcuatæ, 4-dentatæ: maxillæ parvæ; lacinia brevis; palpi 6-articulati, graciles, filiformes, articuli 1^{us}. et 2^{us}. breves: labium longum; ligula brevis, lata; palpi 3-articulati, submoniliformes breves, validi: propedum ungues maximi, reflexi: pro-ungues *Dryinorum* brevicollum quasi articulo tarsorum penultimo affixi.

Fem.—Caput magnum, thorace latius, pubescens, scitissime punctatum, utrinque rotundatum, postice concavum: oculi vix exstantes: antennæ extrorsum crassiores, pubescentes, ad os insertæ, corporis dimidio longiores; articulus 1^{us}. fusiformis, longus, validus, subcurvus; 2^{us}. longi-ovatus; 3^{us}. et sequentes sublineares, usque ad 9^{um}. minime curtantes et latescentes; 10^{us}. fusiiformis, 9^o. paullo longior: thorax longi-ovatus, convexus, nitens, pilis nonnullis albis hirtus: prothorax transversus, scite squameus, antice angustior: mesothorax lævis, fere glaber: sutura transversa punctata; scutum transversum; paraptera et epimera non bene determinata; scutellum breve, fere hemisphæricum: metathorax magnus, crassus, obconicus, scaber, obscurus, per longum carinatus, ad apicem abrupte declivis: petiolus gracilis, brevis: abdomen ovatum, convexum, læve, glabrum, nitens; segmenta 5 dorsalia conspicua, 1^{um}. magnum, 2^{um}. et sequentia breviora: oviductus occultus: pedes longi, validi; coxæ magnæ; femora crassa; tibiæ rectæ; tarsi graciles, articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi: propedibus femora valde incrassata; tibiæ latæ; tarsis articulus 1^{us}. longus, 2^{us}. et 3^{us}. breves, 4^{us}. longus, 5^{us}. brevior: alæ breves, angustæ, pubescentes, iridescentes; nervus humeralis stigma fere attingens; nervus basalis in discum declivis ramulo occurrit nervi humeralis apice rejecto, angulumque fingit obtusum; nervuli quoque nonnulli spurii; stigma magnum oblongum, ramulum emittens angulatum ad alæ apicem propensum.

^b Entom. Mag. II. 219.

Sp. 1. *Dry. collaris*. Fem. *Ater*, *antennæ basi flavæ*, *prothorax fulvus*, *pedes flavi*, *femora fulva fusco varia*, *alæ limpidæ nonnunquam fusco fasciatæ*. Pl. XVI. fig. 4.

Gonatopus collaris . *Dalman, Kongl. Vetens. Acad. Handl. för år, 1818, 82. 7.*

Dryinus collaris . . *Dalman, Analecta Entomologica, 9. 2; Nees ab Ess. Hym. Ich. affin. Monogr. II. 373. 3.*

Dryinus dorsalis . *Nees ab Ess. Hym. Ich. affin. Monogr. II. 372. 2.*

Ater: caput ad os pilis albis sericeis vestitum: oculi et ocelli picei: antennæ nigræ; articuli 1^{us}. et 2^{us}. flavi; 3^{us}. et 4^{us}. fulvi; 5^{us}. fuscus: prothorax fulvus: petiolus piceus: pedes flavi; femora fulva; metafemora apice nigro-fusca; meso- et metatarsi apice fulvi: alæ limpidæ; nervi flavi; stigma piceum. (Corp. long. lin. 1½—2; alar. lin. 1½—2.)

Var. β.—Antennis articulus 3^{us}. fuscus; 4^{us}. et sequentes nigri.

Var. γ.—Prothorax antice fuscus: profemora intus basi fusca: alæ longiores, latiores.

Var. δ.—Proalæ apud stigma late at indistincte fusco fasciatæ.

Found at Holywood, near Belfast, by Mr. Haliday. July, in woods near London.

Fem.—Antennæ corporis dimidio vix longiores: thorax fere glaber: mesothorax inter scutum et scutellum depressus; parapsides conspiciuæ, posticæ approximatae: alæ breves, angustæ.

Sp. 2. *Dry. ephippiger*. Fem. *Fulvus*, *thorax postice niger*, *abdominis discus fuscus*, *alæ sæpe fulvo-tinctæ*.

Gonatopus ephippiger . *Dalman, Kongl. Vetens. Acad. Handl. för år, 1818, 81. 5.*

Dryinus ephippiger . . *Dalman, Analecta Entomologica, 9. 1; Nees ab Ess. Hym. Ich. affin. Monogr. II. 371. 1.*

Læte fulvus: caput supra obscurius, antice flavum, ad os non vestitum: oculi et ocelli picei: antennæ flavæ: prothorax flavus: metathoracis discus niger: petiolus supra fuscus: abdominis discus obscurior: pedes flavi; ungues et pulvilli fusci: alæ fulvæ;

squamulæ et nervi læte flava. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Metathorax supra omnino ater: petiolus supra ater: metafemora apice fulva.

Var. γ. *Var. β.* similis: prothorax postice fuscus: mesothoracis scutum antice fuscum, postice nigrum: scutellum et metathorax omnino atra: abdominis dorsum basi piceum, apice fuscum: alæ limpidæ.

Found in Ireland, by Mr. Haliday. July, in woods, near London.

Sp. 3. Dry. fulviventris. Fem. *Ater, antennæ fuscae apice flavæ, abdomen fulvum, pedes fulvi, alæ limpidæ.*

Dryinus fulviventris . Haliday, Curtis, Brit. Ent. v. 206. 6.

Ater: oculi et ocelli picei: antennæ fuscae; articulus 1^{us}. fulvus; 7^{us}. et sequentes ad 10^{um}. flavi: abdomen fulvum, supra piceum: oviductus flavus: pedes flavi; propedibus coxæ basi fulvæ, femora basi fulva, tibiæ extus fulvo vittatæ, tarsi apice fulvi; mesopedibus femora et tibiæ pallide fulva; metapedibus coxæ basi et femora apice fusca: alæ limpidæ; squamulæ et nervi læte flava. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Antennis articulus 1^{us}. supra fuscus: abdomen supra fulvum, basi piceum: propedibus femora omnino fulva: metafemora fulva: tarsi basi fulvi.

Var. γ.—Antennis articulus 1^{us}. fuscus: propedibus femora fulva, basi fusca: mesofemora basi obscure fulva: metafemora fulva, apice fusca.

Var. δ.—*Var. γ.* similis: metatibiæ fulvæ.

Var. ε.—Pro- et mesothorax picei: pro- et mesopedes omnino flavi.

Found at Holywood, near Belfast, and in Kent, by Mr. Haliday. June, July; in woods near London. Isle of Wight.

Sp. 4. Dry. lucidus. Fem. *Ater, antennæ fuscae basi flavæ apice fulvæ, pedes fulvi flavo varii, metafemora apice fusca, alæ limpidæ.*

Dryinus lucidus . Haliday, Curt. Brit. Ent. v. 206. 4.

Ater, nitens, fere glaber: caput parce punctatum, antice pubescens: oculi et ocelli picei: antennæ fuscae; articuli 1^{us}. et 2^{us}. flavi; 7^{us}. et sequentes ad 10^{um}. fulvi: pro- et mesothorax parce punctati: abdomen nitens, læve, glabrum: pedes fulvi; propedes flavi; femora et tibiæ extus fulva; meso- et metapedum trochanteres genua et tarsi flava, hi apice fulvi; metafemora apice fusca: alæ limpidæ; squamulæ et nervi flava; stigma fusco-cinctum; ramulus fuscus. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{4}$; alar. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$.)

Var. β.—Antennis articuli 7^o. ad 10^{um}. supra nigri: propedes omnino flavi.

Var. γ.—Antennæ fuscae; articuli 1^{us}. et 2^{us}. fulvi: prothorax ferrugineus: abdomen basi utrinque et subtus fulvum: alis stigma fulvo-cinctum; ramulus fulvus.

Var. δ.—*Var. γ.* similis: antennis articuli 8^o. ad 10^{um}. subtus fulvi.

Var. ε.—*Var. γ.* similis: antennæ fulvæ; articuli 3^o. ad 5^{um}. fuscæ.

Var. ζ.—Species distincta?: antennæ et pedes omnino lacte flava, illæ longiores: metacoxæ basi fuscae: alis squamulæ et nervi pallide flava.

Found at Holywood, by Mr. Haliday. May to September, in woods, near London, Windsor Forest, Isle of Wight, North Wales. Taken at Paris by the Comte de Castelneau.

Sp. 5. *Dry. longicornis*. Fem. *Ater*, antennæ fuscae, basi et apice fulvæ, pedes fulvi, alæ limpidæ vix fulvescentes.

Dryinus longicornis. *Dalman, Analecta Entomologica*, 10. 4; *Nees ab Ess. Hym. Ich. affin. Monogr.* II. 375. 5.

Ater, nitens, fere glaber: caput scite sed non dense punctatum, antice albo pubescens: os flavum: oculi et ocelli picei: antennæ fuscae; articuli 1^{us}. 2^{us}. 9^{us}. et 10^{us}. fulvi; 7^{us}. et 8^{us}. subtus fulvi: thorax fere lævis: mesothoracis parapsides distinctæ, postice approximatae; scutellum basi et apice in ordinem punctatum: abdomen læve, glabrum: pedes fulvi; tarsi pallidiores, apice obscure fulvi: metacoxæ basi fuscae: alæ limpidæ, minime fulvo tinctæ; squamulæ et nervi flava; stigma fulvo-cinctum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. 2.)

Found at Holywood, by Mr. Haliday.

Sp. 6. *Dry. flavicornis*. Fem. *Præcedenti similis at crassior latior hirtior.*

Gonatopus flavicornis. *Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 83. 8.*

Dryinus flavicornis. *Dalman, Analecta Entomologica, 10. 3; Nees ab Ess. Hym. Ich. affin. Monogr. II. 373. 4.*

Dryinus crassimanus. *Haliday, Curt. Brit. Ent. V. 206. 5.*

Antennæ fulvæ; articulo 3^o. ad 6^{um}. fuscæ: caput et prothorax dense punctata: mesothorax fere lævis: alæ fulvescentes. (Corp. long. lin. 1½; alar. lin. 2.)

Var. β.—Antennæ omnino pallide fulvæ: metafemora fusco vittata: alis stigma flavum.

Found at Holywood by Mr. Haliday. July, in woods, near London.

Fem.—Caput subquadratum, nitens, parce punctatum, thorace latius, antice albo-pubescent; latera convexa: oculi vix extantes: antennæ graciles, extrorsum crassiores, corpore vix breviores, prope os insertæ; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. minime curtantes et latescentes; 10^{us}. apice conicus, 9^o. longior: thorax longi-ovatus, nitens, vix convexus, parum punctatus, fere glaber; prothorax longus, antice angustior; mesothoracis scutum in uno confusum, scutellum breve transversum; metathorax obconicus, convexus, rugosus, obscurus, postice declivis: petiolus brevis, gracilis: abdomen longi-ovatum, convexus, nitens, læve, glabrum, thorace paullo brevius, apice acuminatum; segmentum 1^{um}. magnum; 2^{um}. et sequentia breviora: pedes graciles: alæ angustæ.

Sp. 7. *Dry. ruficornis*. Fem. *Ater, antennæ fusæ basi fulvæ, pedes fulvi, metafemora apice fusca, alæ limpidæ fulvo tinctæ.*

Gonatopus ruficornis. *Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 83. 9.*

Dryinus ruficornis. . . *Dalman, Analecta Entomologica, II. 5; Nees ab Ess. Hym. Ich. affin. Monogr. II. 375. 6.*

Dryinus rapax. . . . *Haliday, Curt. Brit. Ent. V. 206. 3.*

Ater: oculi et ocelli picei: os fulvum: antennæ fuscæ; articuli 1^{us}. et 2^{us}. fulvi; 9^{us}. et 10^{us}. fulvo-fusci: pedes pallide fulvi; tarsi flavi, apice fulvi; metapedum coxæ basi fuscæ, femora apice fusca: alæ limpidæ, fulvo tinctæ; squamulæ et nervi flava. (Corp. long. lin. $1\frac{1}{2}$ — $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Antennis articuli 6°. ad 10^{um}. fulvi.

Var. γ.—Femora basi subtus fusca; metacoxæ fuscæ.

Found at Holywood by Mr. Haliday. June; Windsor Forest; Isle of Wight.

Fem.—Corpus longum, convexum, pubescens: caput magnum, nitens, parce punctatum, thorace multo latius: oculi vix extantes: antennæ subclavatæ, validæ, pubescentes, corpore non breviores; articulus 1^{us}. fusiformis, validus, arcuatus; 2^{us}. fusiformis, gracilis, 1ⁱ. dimidio vix longior; 3^{us}. et sequentes longil. inæares, ad 9^{um}. usque curtantes et latescentes; 10^{us}. fusiformis, 9°. longior vix latior: thorax longus, sublinearis, punctatus, parum nitens; discus lævior, nitentior: prothorax subquadratus, bene determinatus: mesothoracis parapsidum suturæ conspicuæ: metathorax rugosus, obscurus, ad apicem abrupte declivis: pectus scitissime et confertissime punctatum: petiolus brevis, gracilis: abdomen ovatum, convexum, nitens, læve, glabrum, thorace brevius non angustius; segmenta 1°. ad ultimum decrescentia: pedes longi, validi.

Sp. 8. Dry. frontalis. Fem. Ater, antennæ nigræ basi fulvæ, pedes fulvi, metafemora apice picea, alæ sublimpidæ.

Gonatopus frontalis . Dalman, Kongl. Vetens. Acad. Handl. för år 1818, 84. 10.

Dryinus frontalis . . Dalman, Analecta Entomologica, II. 6; Nees ab Ess. Hym. Ich. affin. Monogr. II. 376. 7.

Ater: oculi et ocelli picei: os fulvum: antennæ nigræ, pubescentes: articuli 1^{us}. et 2^{us}. fulvi: pedes fulvi; tarsi apice fusci; metafemora apice picea: alæ sublimpidæ; squamulæ et nervi flava; stigma fuscum basi flavum, ramulus fulvus. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. 2.)

Found at Holywood by Mr. Haliday. June or July, near London.

Fem.—Corpus crassum, latum: caput subquadratum, thorace latius, nitens, parce punctatum, parum pubescens, utrinque convexum: oculi vix extantes: antennæ subclavatæ, sat validæ, prope os insertæ, corporis dimidio longiores; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. curtantes et latescentes; 10^{us}. fusiformis, 9°. longior et paullo gracilior: thorax ovatus, convexus, pubescens, parum punctatus: prothorax brevis, antice angustior; mesothoracis scutum transversum, parapsides vix conspicuæ, scutellum breve: metathorax obconicus, rugosus, obscurus, ad apicem abrupte declivis: petiolus brevissimus: abdomen ovatum, parum convexum, nitens læve, glabrum, juxta thoraci longum et latum, apice acuminatum; segmenta 1°. ad 5^{um}. decrescientia: pedes longi, validi.

Sp. 9. Dry. infectus. (Haliday MSS.) Fem. *Ater, antennæ fuscæ basi et subtus fulvæ, pedes fulvi nigro et fusco varii, alæ limpidæ fusco fasciatæ.*

Ater: oculi et ocelli picei: os fulvum: antennæ fulvæ, pubescentes; articuli 6°. ad 10^{um}. supra fusci: pedes fulvi, albo pubescentes; coxæ fuscæ, apice fulvæ; femora basi subtus fusca; tarsi apice obscuriores; metapedum coxæ et femora nigra, tibiæ fuscæ: alæ limpidæ; proalæ cuique fascia lata fusca, apud stigma obscurior, postice dilutior; squamulæ et nervi flava; stigma fuscum, ramulus concolor. (Corp. long. lin. 1½—1¾; alar. lin. 1¾—2.)

Var. β.—Metatibiæ fulvæ, fusco bicinctæ.

Var. γ.—Antennis articuli 4°. ad 10^{um}. supra fusci: metatibiæ fulvæ, apice fuscæ.

Var. δ.—Proalis fascia postice oblitterata.

Found in Kent, and in Ireland, by Mr. Haliday. May to July; near London; Windsor Forest.

Sp. 10. Dry. scapularis. (Haliday MSS.) Fem. *Ater, antennæ fuscæ aut fulvæ, pedes fulvi, femora basi nigra, meta-femora apice fusca, alæ limpidæ.*

Ater: oculi et ocelli picei: antennæ supra nigro-fuscæ, subtus fulvæ; articuli 1^{us}. basi et apice 2^{us}.que basi supra fulvi: pedes fulvi; coxæ et femora basi nigra; tarsi flavi, apice fusci; metafemora

apice fusca: alæ limpidae; squamulae et nervi flava; stigma fuscum; ramulus fulvus. (Corp. long. lin. 2; alar. lin. 2½.)

Var. β.—Antennae fulvae; articuli 3^o. ad 10^{um}. supra fusci.

Found in Kent, by Mr. Haliday. June or July, near London.

Fem.—Caput subquadratum, parum nitens, scitissime et dense punctatum, thorace latius, antice albo-pubescent; latera convexa: oculi non extantes: antennae clavatae, sat crassae, submoniliformes, corporis dimidio paullo longiores, prope os insertae; articulus 1^{us}. fusiformis, crassus; 2^{us}. longi-ovatus; 3^{us}. et sequentes oblongo-quadrati, usque ad 9^{um}. curtantes et latescentes; 10^{us}. longi-ovatus, 9^o. longior: thorax ovatus, convexus, nitens, parce punctatus, fere glaber; prothorax brevissimus, antice angustior; mesothorax magnus, scutum transversum, parapsidum suturae vix conspicuae, scutellum breve; metathorax magnus, obscurus, rugosus, parum nitens, ad apicem abrupte declivis: petiolus brevis, crassus: abdomen longi-ovatum, parum convexum, nitens, laeve, glabrum, juxta thoraci longum ac latum, apice acuminatum; segmenta 1^o. ad 5^{um}. decrescentia: pedes breves, validi.

Sp. 11. *Dry. brachycerus*. *Fem. Ater, antennae nigrae, pedes fulvi, femora fusca, alae sublimpidae.*

Dryinus brachycerus. *Dalman, Analecta Entomologica, 12. 9; Nees ab Ess. Hym. Ich. affn. Monogr. II. 378. 10.*

Ater: oculi et ocelli picei: antennae nigrae, pubescentes: pedes fulvi; coxae nigrae, apice fulvae; profemora basi fusca; mesofemora fusca; metafemora nigra, punctata; tarsi apice obscuriores: alae sublimpidae; squamulae et nervi flava; nervus humeralis fuscus; stigma fulvum. (Corp. long. lin. 14—1½; alar. lin. 1½—1¾.)

Var. β.—Mesofemora nigra.

Found in Kent, by Mr. Haliday. June, in woods near London; Scotland.

Fem.—Corpus parvum, pubescens: caput magnum, thorace paullo latius, obscurum, scitissime et confertissime punctatum: antennae subclavatae, graciles, corpore breviores; articulus 1^{us}. fusiformis; 2^{us}. longi-ovatus; 3^{us}. et sequentes longi, sublineares, ad 9^{um}. usque paullulum curtantes et latescentes; clava fusiformis, arti-

culo 9°. paullo longior non latior: thorax longi-ovatus, subconvexus, scitissime et confertissime punctatus, parum nitens; prothorax brevis; mesothoracis parapsidum suturæ vix conspicuæ, scutellum læve nitens; metathorax rugosus, ad apicem abrupte declivis: abdomen ovatum, convexum, nitens, læve, glabrum, thorace brevius vix angustius; segmenta basi ad apicem gradatim decrescentia: pedes mediocres: alæ angustæ.

Sp. 12. Dry. cursor. Fem. *Ater, antennæ nigræ basi fulvæ, pedes picei fulvo varii, alæ albidæ.*

Dryinus cursor. Haliday, Curtis, Brit. Ent. V. Pl. 206. 2.

Ater: oculi et ocelli picei: antennæ nigræ; articulus 1^{us}. fulvus, apice supra fuscus; 2^{us}. fuscus, apice fulvus: pedes fulvi; coxæ basi piceæ; tarsi apice fusci; profemora extus piceo vittata; meso- et metapedum femora et tibiæ picea, hæ pallidiores: alæ albæ; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. 1; alar. lin. 1½.)

Found at Holywood, by Mr. Haliday.

Mas.—Corpus punctatum, subnitens, albo-pubescent: caput magnum, breve, utrinque convexum, thorace latius: oculi vix extantes: antennæ subsetacæ, sat latæ, dense pubescentes, corpore paullo breviores, prope os insertæ; articulus 1^{us}. fusiformis, crassus; 2^{us}. ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. paullulum diminuti; 10^{us}. fusiformis, 9°. longior et paullo angustior: thorax ovatus, convexus, postice angustior: prothorax brevissimus, supra vix conspicuus: mesothorax maximus, latus; scutum transversum, parapsidum suturæ non conspicuæ; scutellum et postscutellum brevia: metathorax magnus, brevi-obconicus, rugosus, obscurus, ad apicem abrupte declivis: petiolus brevissimus: abdomen ovatum, convexum, nitens, læve, glabrum, thorace paullo brevius et angustius; segmentum 1^{um}. longum; 2^{um}. et sequentia breviora, subæqualia: pedes validi, sat longi: alæ latæ.

Sp. 13. Dry. inclytus, (Haliday MSS.) Mas. *Ater, antennæ nigro-piceæ apice et subtus fulvæ, pedes fulvi, femora fusco-fulva, metapedes obscuriores, alæ limpidæ.*

Ater: caput antice albo pubescens: os flavum: oculi et ocelli picei: antennæ fulvæ; articuli 1°. ad 7^{um}. supra nigro-picei:

pedes fulvi; coxæ basi nigræ; femora fusco-fulva; tarsi flavi, apice fulvi; metapedum femora nigra, tibiæ fuscæ, tarsi fulvi; alæ limpidae; squamulae et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. $1\frac{1}{4}$; alar. lin. 13.)

Var. β.—Antennis articulus 7^{us}. omnino fulvus.

Found in Kent by Mr. Haliday. June or July, near London.

Mas.—Caput thorace fere latius: antennæ corpore vix breviores; articulus 10^{us}. fusiformis, 9^o. paullo longior non angustior: mesothoracis parapsidum suturæ conspicuæ.

Fem. D. infecti statura.

Sp. 14. Dry. Jurineanus. Mas et Fem. *Ater*, antennæ mari fulvo-fuscæ, fem. nigræ basi fulvæ, pedes mari flavo-fulvi fusco varii, fem. obscuriores, alæ sublimpidae.

Anteon Jurineanum. *Latr. Nouv. Dict. Nat.* II. 141.

Ater: oculi et ocelli picei: os fulvum: antennæ mari fulvæ; articuli 2^o. ad 7^{um}. supra fusci: antennæ fem. nigræ; articuli 1^{us}. et 2^{us}. fulvi; 3^{us}. fuscus: pedes flavi; metapedes fulvi, femora et tibiæ apice fusca: alæ sublimpidae, squamulae et nervi fulva; nervi subcostales flavi; stigma fulvum. (Corp. long. lin. 1— $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, metapedes flavi; femora et tibiæ apice fulva: alis squamulae et nervi flava.

Var. γ.—*Mas*, *Var. β* similis: antennæ pallide fulvæ; articuli 2^o. ad 5^{um}. supra fusci.

Var. δ.—*Mas*, antennis articuli 2^o. ad 10^{um}. supra fusci.

Var. ε.—*Fem.* antennæ fusco-fulvæ; articulis 1^{us}. supra piceus; 7^{us}. et sequentes ad 10^{um}. nigri: mesofemora subtus nigro-vittata; metafemora nigra, basi fulva.

Found in Ireland by Mr. Haliday. June, September; near London, Windsor Forest, Hampshire, Isle of Wight.

Mas.—Caput subnitens, pubescens, scite et dense punctatum, antice et utrinque convexum, postice concavum: antennæ corpore non breviores: thorax nitens, lævis, pubescens: scutelli margines anticus et posticus ordine punctati.

Sp. 15. Dry. Penidas. Mas. *Ater, antennæ nigræ, pedes fulvi, femora picea, metapedes obscuriores, alæ albidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; coxæ et femora basi picea; metapedum coxæ nigræ apice fulvæ, femora nigro-picea, tibiæ pallide fuscæ: alæ albidæ; squamulæ et nervi costales fulvæ; stigma fuscum; nervi subcostales flavi; ramulus angulatus. (Corp. long. lin. $1-1\frac{1}{2}$; alar. lin. $1\frac{1}{2}-2$.)

Var. β.—Pro- et mesofemora picea, apice flava; protibiæ flavæ.

Var. γ. *Var. β* similis: protarsi basi flavi.

Var. δ. *Var. β* similis: tarsi apice fuscii: metatibiæ fulvæ, apice fuscæ.

Var. ε.—Pro- et mesofemora picea, apice fulva; metatibiæ fuscæ; tarsi fuscii, basi fulvi.

Found near Holywood by Mr. Haliday. June or July, near London.

Sp. 16. Dry. Lyde. Mas. *Ater, antennæ nigræ, pedes nigri, tarsi picei, alæ sublimpidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes nigri; pro- et mesogenua fulva; protibiæ piceæ, subtus fulvæ; pro- et mesotarsi picei; mesotibiæ et metatarsi nigro-picea; metagenua picea: alæ sublimpidæ; squamulæ et nervi fulvæ; stigma piceum. (Corp. long. lin. $1\frac{1}{4}-1\frac{1}{2}$; alar. lin. $1\frac{5}{8}-2$.)

Var. β.—Propedum tibiæ omnino fulvæ; tarsi fuscii, basi fulvi.

April to June, near London.

Sp. 17. Dry. Daos. Mas. *Ater, præcedenti similis: antennæ longiores graciliores nigræ, pedes fulvo-picei, metapedes obscuriores, alæ sublimpidæ.*

Ater: oculi et ocelli picei: antennæ nigræ: pedes fulvi; pro- et mesopedum coxæ et femora picea apice fulva, tarsi pallide fuscii basi fulvi; metapedum coxæ et femora nigra, tibiæ piceæ, trochanteres et tarsi fuscii: alæ sublimpidæ; squamulæ et nervi pallide fusca; stigma fuscum. (Corp. long. lin. $1\frac{1}{2}$; alar. lin. 2.)

Var. β.—Pro- et mesopedes fulvi, coxæ et femora horum picea apice fulva illorum basi picea; metapedes picei, tibiæ fulvæ apice fuscæ,

tarsi fuscī apice piceī; alis squamulæ et nervi costales fulvæ; stigma fusco-fulvum; nervi subcostales flavī.

Found near London.

Mas.—Præcedentium statura: antennæ corpore paullo longiores: alis stigmati ramulus angulatus.

Sp. 18. Dry. Ilus. Mas. *Ater, antennæ nigræ, pedes fulvi, metafemora nonnunquam picea, metapedes obscuriores, alæ fulvo-limpidæ.*

Ater: oculi et ocelli piceī: antennæ nigræ: pedes fulvi; coxæ basi nigræ; metapedum femora apice nigra, tibiæ apice fuscæ, tarsi fuscī: alæ fulvo-limpidæ; squamulæ et nervi flavæ; stigma fuscum, ramulus fulvus. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Metapedum femora apice picea, tibiæ omnino fulvæ, tarsi fusco-fulvi.

Var. γ.—Femora basi picea; metafemora nigro-picea.

Var. δ.—Femora et coxæ nigro-picea, apice fulva.

Found near Holywood by Mr. Haliday. June, July; near London, Windsor Forest, Hampshire, Isle of Wight.

Mas.—Præcedentis statura: alæ longiores latiores; stigmati ramulus arcuatus: parapsidum suturæ vix conspicuæ.

Sp. 19. Dry. Misor. Mas. *Ater, antennæ nigræ, pedes fulvi plus minusve piceo varii, alæ subfuscæ.*

Ater: oculi et ocelli piceī: antennæ nigræ: pedes fulvi; pro- et meso-pedum coxæ trochanteres et femora picea, apice fulva; metapedum coxæ nigræ, femora nigro-picea, trochanteres et tibiæ fusca, tarsi fusco-fulvi apice obscuriores: alæ subfuscæ; squamulæ et nervi fulvæ; stigma piceum; nervi subcostales flavī. (Corp. long. lin. $1\frac{1}{2}$ — $1\frac{3}{4}$; alar. lin. 2— $2\frac{1}{4}$.)

Var. β.—Metapedum femora fulvo-picea, tibiæ fusco-fulvæ.

Var. γ.—Antennis articulus 1^{us}. fulvus, apice piceus: pro- et meso-pedum coxæ et femora fulva, basi picea; protibiæ et protarsi flavæ, hi apice fulvi; metapedes fulvi, coxæ et femora basi picea, tarsi apice fuscī.

Var. δ. *Var. γ.* similis: metafemora apice fusca.

Found near London.

Sp. 20. Dry. Otiartes. Mas. *Ater, antennæ nigræ, quam præcedentium latiores, pedes fulvi, femora piceo varia, alæ limpidæ.*

Ater: os fulvum: palpi læte flavi: oculi et ocelli picei: antennæ nigræ, latæ, pubescentes, corpore paullo longiores: pedes fulvi; coxæ basi piceæ; femora piceo vittata; tarsi apice fusci; metapedum femora picea, tibiæ fuscæ: alæ limpidæ; squamulæ fulvæ; nervi costales picei, subcostales flavi; stigma piceum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{5}{4}$ —2.)

Var. β.—Antennis articulus 1^{us}. fulvus, supra et apice piceus: pro- et mesopedum tibiæ et tarsi flava; metapedum femora basi et tibiæ subtus fulva.

Var. γ.—Mesopedum femora picea basi fulva, tibiæ fuscæ; metatarsi supra fusci.

Var. δ.—*Var. β* similis: mesotibiæ supra pallide fuscæ: alis nervi costales fulvi.

Found near London.

Sp. 21. Dry. Alorus. Mas. *Ater, præcedentibus minor angustior, antennæ nigræ graciliores, pedes fulvi piceo aut fusco varii, alæ limpidæ.*

Ater: os flavum: oculi et ocelli picei: antennæ nigræ, graciles, pubescentes, corpore paullo longiores; articulus 1^{us}. basi fuscus: pedes fulvi; coxæ basi piceæ; tarsi apice fusci; metafemora apice fusca; protibiæ et protarsi flava: alæ limpidæ; squamulæ et nervi flava; stigma fuscum, ramulus fulvus. (Corp. long. lin. 1 — $1\frac{1}{4}$; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—Mesofemora basi picea: metafemora picea.

Var. γ.—Antennis articulis 1^{us}. omnino niger: propedum femora basi fusca, tibiæ et tarsi fulva; meso- et metacoxæ nigræ, apice fulvæ; mesofemora picea, apice fulva; metapedum femora nigra, tibiæ apice et tarsi supra fusca: alis nervi costales fulvi, subcostales flavi; stigma piceum.

June; near London, Windsor Forest, Isle of Wight.

Fem.—Corpus latum, crassum, convexum: caput sat magnum, punctatum, pubescens, parum nitens, thorace vix latius: oculi extantes: antennæ clavatæ, validæ, corporis dimidio longiores;

articulus 1^{us}. fusiformis; 2^{us}. longi-ovatus; 3^{us}. et sequentes breviores, usque ad 9^{um}. curtantes et latescentes; 10^{us}. longi-ovatus, 9^o. longior vix latior: thorax ovatus, altus, parce pubescens: prothorax obscurus, bene determinatus, transverse rugosus: mesothoracis scutum scitissime et confertissime punctatum, parum nitens; parapsidum suturæ vix conspicuæ; scutellum nitens, læve: metathorax obscurus, rugosus, ad apicem abrupte declivis: abdomen longi-ovatum, convexum, subtus fere planum, apice acuminatum, thorace angustius et paullo brevius; segmenta 1^o. ad 6^{um}. decrescientia: alæ latæ.

Sp. 22. Dry. Sisithrus. Fem. *Ater*, antennæ nigræ basi fulvæ, pedes fulvi, femora piceo varia, alæ albæ.

Ater: oculi et ocelli picei: antennæ nigræ; articulus 1^{us}. fulvus, supra piceus; 2^{us}. piceus, apice fulvus: pedes fulvi; coxæ basi piceæ; profemora basi picea; meso-et metapedum femora et tibiæ supra picea; tarsi apice fusi: alæ albæ; squamulæ et nervi fulva; stigma piceum; nervi subcostales flavi. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$; alar. lin. $1\frac{3}{4}$ —2.)

Var. β.—Antennis articulus 3^{us}. fuscus; alis ramulus flavus.

Var. γ.—*Var. β* similis: antennis articuli 4^o. ad 10^{um}. nigro-picei.

Var. δ.—Mesotibiæ omnino fulvæ.

Found near London.

Mas.—Caput sat magnum, breve, obscurum, pubescens, scitissime et confertissime punctatum, thorace vix latius, antice convexum, postice concavum: oculi non extantes: antennæ moniliformes, pubescentes, corpore paullo breviores; articulus 1^{us}. fusiformis, validus; 2^{us}. ovatus; 3^{us}. et sequentes subfusiformes, usque ad 9^{um}. paullulum coarctati; 10^{us}. fusiformis 9^o. multo longior: thorax pyriformis, convexus, scitissime et confertissime punctatus, obscurus, pubescens: prothorax brevissimus, supra vix conspicuus; mesothoracis scutum magnum, transversum; parapsidum suturæ non bene determinatæ; scutellum brevi-obconicum, nitens, fere læve: metathorax obconicus, rugosus, ad apicem abrupte declivis; petiolus brevis: abdomen ovatum, convexum, nitens, læve, glabrum; apice acuminatum, thorace multo brevius et angustius; segmenta 1^{um}. et 2^{um}. magna; 3^{um}. et sequentia breviora: pedes graciles: alæ amplæ; stigmati ramulus brevis, angulatus.

Sp. 23. *Dry. nanus*. (Haliday MSS.) *Mas. Ater, antennæ nigrae, pedes nigri, tarsi picei, protibiæ fulvæ, alæ limpidae.*

Ater: oculi et ocelli picei; antennæ nigrae; pedes nigri; propedum trochanteres et tarsi fuscii, genua et tibiæ fulva; meso- et metapedum trochanteres genua et tarsi picea: alæ limpidae; squamulae et nervi fulva; stigma fuscum; nervi subcostales flavi. (Corp. long. lin. $\frac{3}{4}$; alar, lin. 1.)

Found in Wicklow, by Mr. Haliday.

GENUS.—*APHELOPUS*, *Dalman*.

Mas.—Caput mediocre, transversum, vix convexum, thorace fere angustius, antice subproductum, utrinque convexum, postice concavum, obscurum, pubescens, scitissime et confertissime punctatum: oculi ovati, mediocres, laterales, vix extantes; ocelli vertice triangulum fingentes: antennæ filiformes, sat graciles, pubescentes, corpore fere longiores; articulus 1^{us}. fusiformis, validus; 2^{us}. ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. subprotracti; 10^{us}. fusiformis, 9^o. paullo longior et gracilior: thorax pyriformis, convexus, scitissime et confertissime punctatus, obscurus, pubescens: prothorax brevissimus, supra non conspicuus: mesothoracis scutum magnum transversum, parapsides bene determinatae; scutellum et metascutellum brevi-obconica, laeviora, nitentia: metathorax brevi-obconicus, rugosus, ad apicem abrupte declivis: petiolus brevis, validus: abdomen longi-ovatum, subconvexum, fere compressum, nitens, laeve, glabrum, thorace brevius et multo angustius; segmentum 1^{um}. maximum, dorsi plus dimidium obtegens; 2^{um}. et sequentia brevia: pedes graciles; propedes simplices breviores, ungues minuti; metapedes longiores, coxæ magnæ: proalis nervus unicus basi emissus subcostam usque ad stigma percurrens, hoc magnum oblongum ramulum emittens arcuatum.

Fem.—Antennæ extrorsum crassiores, corpore breviores; articulus 2^{us}. longi-ovatus; 3^{us}. et sequentes ad 9^{um}. parum curtantes et latetescentes; 10^{us}. fusiformis, 9^o. multo longior vix latior: abdomen ensiforme, compressum, thorace multo angustius et brevius.

Sp. 1. *Aphel. melaleucus*. *Mas et Fem. Ater, fem. caput antice album, antennæ et pedes nigra picea aut fulva, alæ albidæ.* Pl. XVI. Fig. 3.

Gonatopus melaleucus. *Dalman, Kongl. Vetens. Acad. Handl. för år, 1818. 82. 6.*

Dryinus (Aphelopus) mela- { *Dalman, Analecta Entomologica,*
 leucus { 14. 13; *Nees ab Ess. Hym.*
Ich. affin. Monogr. II. 388. 1.

Dryinus (Aphelopus) atratus, *Dalman, Analecta Entomologica,*
 15. 14; *Nees ab Ess. Hym.*
Ich. affin. Monogr. II. 389. 2.

Mas.—Ater: oculi et ocelli picei: os flavum: palpi albidi: antennæ nigrae: pedes picei, pubescentes; propedes flavi, femora basi picea, tarsi fulvi; mesopedum coxæ fulva: basi piceæ, trochanteres genua et tarsi fulva; metapedes nigro-picei, coxæ apice fulvæ, trochanteres fulvi, genua fusca, tarsi fusci subtus fulvi: alæ albo-limpidæ; squamulæ et nervi fulva; stigma nigro-piceum.

Fem.—Caput antice et circum oculos album: antennis articuli 1^{us}. 2^{us}. 6^{us}. et 7^{us}. picei; 8^{us}. 9^{us}. et 10^{us}. fulvi: propedes flavi, femora basi et tarsi apice fulva: mesopedes picei, trochanteres flavi, tibiæ fulvæ fusco cinctæ, tarsi fulvi basi flavi: metapedes nigro-picei, trochanteres et femora basi flava, genua fulva, tarsi fusci subtus fulvi; alis squamulæ et nervi flava; stigma piceum, ramulus fulvus. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

Var. β.—*Mas*, mesotibiæ fulvæ.

Var. γ.—*Mas*, propedum coxæ et femora picea, apice fulva; mesopedum coxæ piceæ, trochanteres genua et tarsi fusca; metapedum coxæ nigrae, tarsi picei.

Var. δ.—*Mas. Var. γ* similis: mesotarsi fulvi; metafemora nigra.

Var. ε.—*Mas.* Propedes flavi, tarsi apice fulvi; mesopedes fulvi, tarsi basi flavi; metapedes picei, trochanteres fulvi, tarsi fusci subtus fulvi: alis squamulæ et nervi flava; stigma piceum.

Var. ζ.—*Mas, Var. ε* similis: mesopedes flavi: metapedum coxæ apice trochanteres et femora basi flava, tibiæ fusca, tarsi flavi apice fulvi.

Var. η.—*Fem.* antennæ nigrae; articuli 8^o. ad 10^{um}. fusci, subtus fulvi: mesopedum femora apice fulva, tibiæ pallide fulvæ.

Var. θ.—*Fem. Var. η* similis: mesopedum coxæ et femora fulva.

Var. ι.—*Fem. Var. θ* similis: metapedum coxæ et femora picea, tibiæ fusco-fulvæ, tarsi fulvi apice fusci.

Var. κ. Fem. Var. ι similis: antennæ piceæ, subtus fulvæ; articuli 7°. ad 10^{um}. omnino fulvi.

Var. λ.—Fem. caput antice et utrinque omnino album: antennæ piceæ; articuli 1^{us}. 8^{us}. 9^{us}. et 10^{us}. fulvi, 2^{us}. et 7^{us}. fuscii: pedes pallide flavi; metapedum femora picea, tibiæ fuscæ.

Var. μ.—Fem. Var. λ similis: metapedum femora flava apice picea, tibiæ fulvæ, tarsi apice fuscii.

Var. ν.—Fem. Var. μ similis: antennis articulus 7^{us}. fulvus: alis stigma pallide fuscum.

Var. ξ.—Fem. antennæ piceæ; articuli 1^{us}. 8^{us}. 9^{us}. et 10^{us}. fulvi: pedes flavi; metapedum femora et tarsi apice fusca, tibiæ fulvo-fuscæ.

Var. ο.—Fem. Var. ν similis: antennæ læte fulvæ: metapedum tibiæ flavæ, tarsi apice fulvi.

May to July; on lime trees; near London; Windsor Forest; Scotland; Isle of Jersey. Found in Ireland by Mr. Haliday.

GENUS.—LABEO. *Haliday.*

Corpus lineare, pubescens, subplanum; caput mediocre, transversum, convexum, obscurum, scite et conferte punctatum, antice subproductum, utrinque rotundum, postice concavum, juxta thoraci latum: oculi mediocres, non extantes: ocelli vertice triangulum fingentes: mandibulæ arcuatæ, tridentatæ; dentes longi acuti: palpi maxillares 3-articulati: antennæ filiformes, graciles, pubescentes, corpore vix longiores; articulus 1^{us}. fusiformis præ 2°. brevis, hic longi-ovatus; 3^{us}. et sequentes longi, lineares, usque ad 9^{um}. curtantes; 10^{us}. acuminatus, 9°. multo longior: thorax pyriformis, vix convexus: prothorax brevissimus, supra non conspicuus: mesothoracis scutum magnum, transversum, obscurum, scitissime et confertissime punctatum; parapsidum suturæ conspicuæ; scutellum et metascutellum parva, transversa, nitentia, lævia, fere glabra: metathorax magnus, obconicus, rugosus, obscurus, ad apicem abrupte declivis: abdomen longi-ovatum, planum, subsessile, nitens, læve, glabrum, thorace brevius et paullo angustius; segmenta transversa, ad apicem breviora: pedes graciles, simplices, pubescentes; coxæ sat longæ; femora gracilia; tibiæ rectæ; tarsorum articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. longior; ungues et pulvilli minuti: alæ amplæ; nervus subcostalis stigma attingens; ramulus nervo subcostali ante stigma rejectus angulum

nervo alæ basi medio projecto fingens, et nervo spurio alæ marginem posticum pereurrente lapsus; nervi quoque nonnulli vix conspicui in alæ disco cellulas 2 spurias fingentes; stigma longum, angustum, ramulum arcuatum ad alæ apicem productum emittens.

Sp. 1. Lab. excisus. Mas. *Ater, antennæ nigræ, pedes picei, protibiæ fulvæ, alæ limpidæ*. Pl. XVI. Fig. 2.

Antæon? excisus. *Westwood, London's Mag. Nat. Hist.* VI. 497.

Ater: oculi et ocelli picei: antennæ nigræ: pedes picei; coxæ nigræ; trochanteres et tarsi fusci; propedum femora apice et tibiæ fulvæ; meso- et metapedum genua et tibiæ basi fulvæ: alæ limpidæ; squamulæ et nervi fulvæ; stigma fuscum. (Corp. long. lin. $1\frac{1}{4}$ — $1\frac{3}{8}$; alar. lin. $1\frac{3}{8}$ — $2\frac{1}{4}$.)

Var. β.—Nervus subcostalis et ramulus fusci.

Var. γ.—Propedum femora fulvæ basi picea, tarsi obscure fulvi; mesopedum tibiæ fuscæ basi et apice fulvæ.

Var. δ.—*Var. γ* similis: mesotarsi obscure fulvi: alis stigma pallide fuscum.

Found in Ireland by Mr. Haliday. July; on lime-trees; near London.

SECTIO II.

GENUS.—EMBOLEMUS. *Westwood.*

Polyplanus. Nees ab Essenbeck.

Mas.—Caput parvum, subrotundum, convexum, pubescens, parum nitens, scitissime punctatum, thorace angustius, antice productum et deinde subtus ad os retractum: oculi parvi, laterales, exstantes: ocelli vertice triangulum fingentes: mandibulæ oblongo-quadratae, tridentatae, rectae; dentes acuti subæquales: maxillæ parvæ, breves, subovatae; palpi 5-articulati, setaceæ, graciles; articuli fusiformes, 1^{us}. gracilis subarcuatus, 2^{us}. dilatatus, 3^{us}. gracilis, 4^{us}. 3^o. brevior, 5^{us}. linearis 4^o. multo longior: labium parvum, angustum, sublineare; ligula transversa, brevis; palpi 3-articulati, submoniliformes, validi, breves, articuli ovati subæquales: antennæ filiformes, pubescentes, corpore longiores, basi approximatae, fronte insertae; articulus 1^{us}. fusiformis, validus; 2^{us}. brevissimus; 3^{us}. et sequentes longi, lineares, approximati,

usque ad 9^{um}. curtantes; 10^{us}. acuminatus, 9°. vix longior: thorax fusiformis, convexus, subnitens, pubescens, parce et scite punctatus: prothorax brevis, supra conspicuus: mesothoracis scutum latitudine fere longius; parapsidum suturæ vix conspicuæ; scutellum obconicum: metathorax obconicus, rugosus, per longum sulcatus, ad apicem abrupte declivis: abdomen longi-ovatum, convexus, petiolatum, nitens, læve, basi scite punctatum, thorace brevius non augustius; segmenta 1^{um}. et 2^{um}. maxima, reliqua parva: pedes longi; coxæ magnæ; femora valida; tibiæ rectæ; tarsi graciles, articuli 1°. ad 4^{um}. curtantes, 5^{us}. 4°. longior; ungues et pulvilli parvi: alæ amplæ; nervi *Aulaci* more collocati; nervus subcostalis stigma attingens; nervus 2^{us}. alæ basi medio emissus, disco divisus et cellulam fingens, deinde ad apicem productus; nervus 3^{us}. alæ marginem posticum percurrens, apud medium quasi recta semita abductus; nervuli quoque nonnulli transversi, 1^{us}. interruptus inter stigmatis ramulum et nervum 2^{um}., 2^{us}. inter nervos 2^{um}. et 3^{um}., 3^{us}. inter cellulæ angulum et nervum 3^{um}. renovatum; nervus subcostalis ramulum rejiciens cellulæ angulo junctum; stigma longum, perangustum, ramulum arcuatum ad alæ apicem productum emittens; metalis nervi 2, unus costalis, alter spurius ramulos emittens.

Fem.—Antennæ 13-articulatæ, subclavatæ, corpore breviores; articulus 1^{us}. præ *mari* brevis; 3^{us}. et sequentes lineares, subæquales, usque ad 12^{um}. paullulum latescentes; 13^{us}. fusiformis, 12°. longior vix latior: abdomen thorace longius: alæ quam *mari* angustiores; nervi non bene determinati.

Sp. 1. Emb. Ruddii. Mas et Fem. *Ater, antennæ nigræ, pedes rufo-fusci aut picei, alæ mari fusæ, fem. albidæ.*
Pl. XVI. Fig. 1.

Embolemus Ruddii *Westwood. Lond. and Edin. Phil. Mag. and Journ. of Science. Third series. II. 441.*

Polyplanus Sickershusanus . *Nees ab Ess. Hym. Ich. affin. Monogr. II. 349.*

Mas.—*Ater*: oculi et ocelli picei: palpi flavi: antennæ nigræ: abdominis segmentum 1^{um}. apice piceum: pedes rufi; trochanteres et genua pallidiora; tibiæ et tarsi fusca: alæ fusæ; squamulæ et nervi picea.

Fem.—Pedes picei; trochanteres et genua rufa; tarsi fusci: alæ albidæ; nervi pallide flavi; squamulæ, nervus subcostalis et stigma fulva. (Corp. long. lin. $1\frac{1}{2}$ —2; alar. lin. $1\frac{5}{4}$ —3.)

Var. β.—*Mas*, antennis articuli 1^{us}. et 2^{us}. rufi, supra picci: pedes pallide rufi; femora et coxæ piccæ, apice rufa: alis nervi pallide fusi.

Var. γ.—*Mas*, coxæ piccæ; trochanteres fusi; femora nigropiccæ.

Var. δ.—*Mas*, *Var. γ* similis: pro- et mesopedum tibiæ et tarsi rufa, illæ supra fuscæ.

Found in Scotland, and in the Isle of Skye, by Mr. Haliday. September; Isle of Wight, Wales, Devonshire, Cornwall.

SECTIO III.

GENUS.—EPYRIS. *Westwood.*

Caput ovatum nutans latitudine thoracis: antennæ *maris* 13-articulatæ articulis flagelli cylindricis: areola radialis elongata in alæ apice incompleta: unguis integri.

Sp. 1. *Epyris niger.* (*Westwood in Philosophical Magazine, August, 1832, page 129.*) *Statura fere Bethylli, differt capite minore, antennis propius ab oculis, his pilosis: thorace longiore: tarsis gracilioribus; alarum anticarum nervis humeralibus disjunctis, areolæ brachialis anterioris formâ et radialis.* (Long. corp. $2\frac{1}{4}$ lin.; alar. $3\frac{1}{2}$.) Pl. XVI. Fig. 6.

Mas.—Caput ovatum nutans: oculi mediocres ovati distantes laterales ab occipite remoti raro pilosi: ocelli tres in vertice in triangulum collocati: antennæ prope oculos ad basin clypei foveolæ quæque insertæ thoracis longitudine filiformes pubescentes 13-articulatæ articulo primo majore cylindrico 2 minore obconico reliquis cylindricis subæqualibus ultimo paulo longiore apice attenuato: carinula faciei longitudinalis antennis integraret: clypeus (vel epistoma?) brevis transversa antrorsum attenuata margine antico recto: mandibulæ validæ oblongæ forcipatæ apice decurvæ ibidem paululum dilatatæ et oblique truncatæ denticulis 4 extimo acuto: thorax oblongus deplanatus capite vix latius et plus duplo longius: collare fere trigonum: mesothoracis scutum transversum parapsides parvæ deflexæ trigonæ dorsum lineolis 2 parallelis postice abbreviatis impressum: scutellum scuti fere longitudine deplanatum trigonum: paraptera profunde excavata: metathoracis paraptera in fundo crenata in dorso medio carinulæ

parvæ ope conjuncta, scutello haud aliter explicato: postscutellum mesothorace parum brevius basi truncatum dorso planiusculum apice rotundatum: abdomen thorace brevius et fere angustius depressum ellipticum (structura qualis *Bethyllo*) segmentis 7 longitudine subæqualibus 1°. basi sensim attenuato petiolo vix manifesto: alarum forma fere qualis *Bethyllo*: nervus subcostalis a costali disjunctus: stigma minutum oblongum in costa media: nervus radialis vix ultra conspiciendus; cubitalis a stigmate leni flexurâ discedens mox parallelus prope marginem excurrit, ante apicem alæ abrupte desinens areolam radialem elongatam linearem apice apertam designans: areola brachialis anterior acute trigona stigma non attingit; posterior linearis illius apicem perpaulo superat nervo claudente arcuato: nervi brachiales ultra hunc cito evanescent: nervus subulnaris^c obsoletissimus: alarum posticarum nervi decolores quasi deletæ modo subcostalis in alæ basi vestigium et alterum adhuc minus in lobo axillari cujus incisura profunda: pedes sat longi, graciliores quam *Bethyllo*, coxis obconicis trochanteribus breviusculis femoribus compressis fusiformibus tibiis rectis pubescentibus calcaribus conspicuis tarsis longioribus tenuibus articulo primo trium sequentium longitudinem æquiparante unguibus tenuibus acutis integris.

“Niger hic, abdomine nitido glabro, antennarum articulo 1°. apice reliquis cunctis pedibusque rufo-piceis, trochanteribus tibiis tarsisque ferruginosis, mandibulis apice ferrugineis, capite thoraceque subtiliter intricatim punctulatis, fronte vertice pro- et mesothoracis dorso præterea punctis majoribus sparsis pilisque raris albidis, scutelli disco læviore nitente, metathorace basi ruguloso linea longitudinali elevata postice evanescente, alis subfumato hyalinis, squamulis radice nervis stigmatæque fusco-ferrugineis: de sexus discrimine et oris structura intimâ nil adhuc constat.”—*Haliday, MSS.*

September; Isle of Wight. Found near Paris, by the Comte de Castelneau.

GENUS.—BETHYLUS. *Latreille.*

Omalus. Jurine.

Fem.—Caput ovatum, nutans, planum, thorace latius, scitissime et confertissime punctatum, obscurum, pubescens: oculi parvi, subovati, remoti, laterales: ocelli vertice triangulum fingentes

^c “Nervus cubitalis.” St. F. &c.

parvum: mandibulæ longæ, angustæ, arenatæ, 4-dentatæ; dentes parvi, subæquales, vix acuti: palpi maxillares 4-articulati, longi, graciles, filiformes; articulus 1^{us}. longi-cyathiformis; 2^{us}. et 3^{us}. longiores, subæquales; 4^{us}. 3^o. multo longior, apice acuminatus: antennæ 12-articulatæ, setacæ, graciles, ad os insertæ, corporis dimidio breviores; articulus 1^{us}. validus, fusiformis; 2^{us}. et sequentes subfusiformes, usque ad 12^{um}. decrescentes: thorax fusiformis, planus, obscurus, pubescens, scitissime et confertissime punctatus; prothorax maximus, conicus; mesothoracis scutum transversum, parapsidum suturæ non conspicuæ, scutellum obconicum nitens fere læve; metathorax maximus, obeconicus fere glaber, ad apicem abrupte declivis, linea per medium nitens lævis postice dilatata: petiolus brevissimus: abdomen ovatum, subconvexum, nitens, læve, fere glabrum, thorace paullo brevius et latius; segmentum 1^{um}. maximum; 2^{um}. magnum; 3^{um}. medioere; 4^{um}. et sequentia breviora: pedes validi; propedes breviores; metapedes longiores; coxæ magnæ; trochanteres parvi; femora clavata; tibiæ rectæ; protarsi crassi, articulus 1^{us}. longus, 2^{us}. 3^{us}. et 4^{us}. breves, 5^{us}. longior; meso- et metatarsi longiores, graciliores, articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues magni: alæ angustæ, pubescentes: proalis nervi 3 per longum excurrentes; 1^{us}. costæ trienti attingens, in discum descendit et cellulam longam angustam fingens stigmatē desinit, 2^{us}. ante alæ medium desinit, 3^{us}. adhuc brevior, amborum apices ramulis 2 transversis nervis anterioribus alligati; stigma parvum, breve, ramulum emittens longum subarcuatum apice angulatum et costæ propensum.

Mas, fem. similis: abdomen brevius, postice subquadratum: antennæ fere filiformes.

Sp. 1. *Bet. fuscicornis*.^a *Mas et Fem. Ater, antennis et pedibus piceis aut fulvis, proalis plus minusve fuscis.*

Bethylus fuscicornis. Latr. Gén. Crust. et Ins. IV. 41; Spin. Ins. Lig. Fasc. III. 168.

Omalus fuscicornis. Jurine, Hymen. 301. Pl. 13. 43; Nees ab Ess. Hym. Ich. affn. Monogr. II. 392. 1.

Ater: oculi et ocelli picei: antennæ fulvæ, supra et apice piceæ; articulus 1^{us}. piceus, apice fulvus: pedes fulvi; coxæ et femora nigro-picea; meso- et metapedum tibiæ pallide piceæ basi et apice

^a Ent. Magazine, II. 219.

fulvæ, tarsi apice fusci: alæ limpidæ; proalis discus plus minusve fuscus; nervi costales fusci, subcostales flavi; stigma piceum. (Corp. long. lin. $1-2\frac{1}{2}$; alar. lin. $1\frac{1}{2}-2\frac{1}{2}$.)

Var. β.—*Mas*, protibiæ basi fuscæ; meso- et metatibiæ piceæ: proalæ omnino fuscæ; metalæ apice subfuscæ.

Var. γ.—*Mas*, *Var. β* similis: antennæ fulvæ, apice supra fuscæ.

Var. δ.—*Mas*, proalæ fere omnino limpidæ; nervi costales flavi, ramulus fulvus.

Var. ε.—*Fem.* antennæ basi omnino fulvæ.

Var. ζ.—*Fem.* protibiæ basi fuscæ; meso- et metatibiæ piceæ.

Var. η.—*Fem. Var. ε* similis: mesotibiæ fulvæ; metatibiæ piceo-fulvæ; tarsi flavi, apice fusci.

Var. θ.—*Fem.* antennæ fulvæ, basi pallidiores, apice supra fuscæ: propedes flavi, femora basi supra fusco-vittata; meso- et metapedes fulvi, coxæ et femora picea illæ apice fulvæ, tarsi apice fusci, metatibiæ fusco-cinctæ: proalis nervi costales flavi.

June to September; England and Scotland. Found in Ireland by Mr. Haliday, and near Paris by the Comte de Castelneau.

ART. LIV.—*Descriptions of two new Genera belonging to the family Chalcididæ.* By J. O. WESTWOOD, F.L.S. &c.

THE family *Chalcididæ*, independent of the great beauty of many of its species, and the singularity of the economy of the whole, possesses additional claims to the attention of the Entomologist on two other grounds. 1st, No family presents more numerous instances of anomalous structure in the different organs; and, 2d, The series of affinity amongst the different sub-families is so complicated, that it would require far more philosophical views of the nature of the relations of animals than we at present possess, to account for so many of, what may be termed, cross-affinities. The two insects described below exemplify both these peculiarities of this family

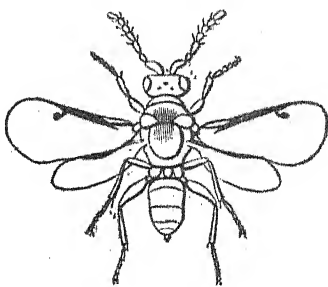
They are both distinguished by the remarkable incrassation of the costa of the anterior wings, of which I recollect, at present, no other analogous example. Mr. Walker has, indeed, characterized a genus belonging to the same family under the name of *Pachyneuron*; but the incrassation of the costa of the forewings in that genus is quite trifling compared to that observed in either of the following insects;—whilst, at the same time, the insect secondly described, presents a most striking passage between two sub-families (*Encyrtides* and *Eulophides*), between which two equally strong modes of transition have already been proved to exist; *Agonioneurus* and *Coccophagus* forming one passage, and *Tetracnemus* and the typical *Eulophi* a second. It will be evident that the two insects described below, although possessing a nearly similar incrassated structure of the costa of the wings, are by no means nearly allied together by affinity; they, indeed, evidently belonging to distinct sub-families. Hence, in respect to this character, these insects are allied together by no nearer relation than that of analogy.

PLATYNOCHEILUS, *Westwood.*^a

Cleonymo affinis; differt antennarum articulis, costâ alarum incrassatâ, &c. Corpus elongatum, gracile: caput thoracis latitudine, oculis magnis lateralibus: antennæ thoracis fere longitudine 11- (vel 12-?) articulatæ, articulo 1°. elongato, 2°. præcedentis fere dimidii longitudine, articulis sequentibus parvis et quasi coarctatis, proximis 5 distinctis æqualibus, clava crassiori ovata 3-articulata: collare elongatum trigonum: thorax oblongus postice rotundatus: abdomen oblongum depressum lateribus subelevatis, pedunculus brevis: pedes graciles simplices tarsis 5-articulatis: alæ anticæ costâ dilatatâ et ad originem rami deflexi extensâ, nervo subcostali nullo.

Mas.

Species unica mihi adhuc cognita.



^a Πλατυνω, dilato, et χείλος, mergo.

PLATYNOCHEILUS ERICHSONII, *Westwood*.

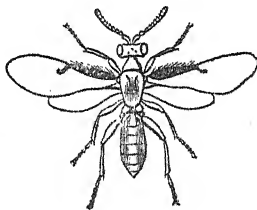
Caput et thorax aureo-viridia, punctata: abdomen viridi-auratum, nitidissimum; antennæ et pedes fusci, geniculis flavis, femoribus viridescentibus, costâ alarum anticarum nigrâ. (Long. corp. lin. $1\frac{1}{4}$.)

Habitat prope Berolinem. Mense Maio captus.

In Musæo Dom. Erichson, Entomologi clarissimi, amicissimi.

PLEUROPACHUS,^b *Westwood*.

Genus inter *Eulophides* et *Encyrtides* osculans, his structurâ thoracis et pedum intermediarum, illis tarsis 4-articulatis et antennis affinis. Caput transversum, thoracis fere latitudine: antennæ thorace breviores, et, ut videtur 7-articulatæ, articulo 1°. elongato subtus paullo dilatato, 2°. brevi, 3°. duplo longiori, (inter 2^{um}. et 3^{um}. articulus, minutissimus cyathiformis exstat,) 4°. 5°. et 6°. æqualibus discretis, 2°. paullo majoribus, ultimo oblongo-ovato apice acuto (4-? articulato): thorax ovatus crassus ut in *Encyrtis* constructus scutello, et mesosterno maximis: pedes satis graciles, intermedii et postici ad basin valde approximati: tarsi 4-articulati pulvillo magno: tibiæ intermediæ paullo extus curvatæ, calcari longiori et intus ciliato instructæ, articuloque basali tarsorum intermediarum paullo dilatato: alæ anticiæ nervo subcostali brevi, costâ pone ejus conjunctionem dilatata usque ad originem ramuli stigmatalis, hoc curvato et clavato; costâ etiam alarum posticarum in medio incrassatâ: abdomen ovato-orbiculatum obtusum planum, fere latitudine thoracis, apice mucronatum, petiolo triplo breviori, recto, cylindrico, striolato, adfixum. *Mas*.



Species unica adhuc mihi cognita.

Sp. 1. *Pleuropachus costalis*. (Long. corp. 1 lin.; expans. alar. 2 lin.)

Entedon costalis . . *Dalm. Act. Holm.* 1820, p. 174.

Elachestus costalis . *Nees ab Esenbeck, Hymen. Monog.* Vol. II. p. 143.

^b Πλευρα, membrana succingens costas, et παχυσ, crassus.

Habitat "in floribus *Chærophylli sylvestris* prope Seckershausen."
Captus Esenb. loc. cit.

In Mus. Academiæ Bounæ, olim celeberr. Neesii ab Esenbeck, cujus curâ benevolenti hoc insectum cum collectione totâ *Chalcididarum* et *Proctotrupidarum* ipso descriptâ, mecum ad examinandum, communicatum est.

ART. LV.—*Note on Macroplea Zosteræ*.—By C. C.
BABINGTON, M. A.

As the habits of *Macroplea zosteræ* do not appear to be generally known to Entomologists, a slight notice of them, from my own observation, may not be considered uninteresting. On the 4th of June, 1834, when on a visit to a friend at Cley-next-the-Sea, Norfolk, I accidentally captured about eighty specimens of this rare insect. We were botanizing in the marshes near to that place, and having gathered a specimen of *Potamogeton pectinatus* (a plant which always grows under water, only raising its small heads of flowers above the surface), in a ditch of fresh water, I was much surprised by finding in the centre of its dense mass of leaves and branches, a single specimen of *Macroplea*. There being a great quantity of that plant in the ditch, we of course examined numerous specimens, and were gratified by the discovery of two or three, and sometimes six or eight individual insects in each of them. The insects, which are very sluggish, appear to live quite under water, since they never occurred upon the outside of the dense tufts of the *Potamogeton*, but always in the interior of the mass, quite enclosed by the branches, and not easy to discover without a close examination. There were many of them found in pairs, showing that this is their natural habitation, and that they do not live, like their allies the *Donaciæ*, upon those parts of water plants which are above the surface. Although the ditch was full of various plants, several of which formed dense mats, (such as *Ranunculus aquatilis*,) yet we could not discover a single specimen of *Macroplea* upon any plant except the *Potamogeton*.

CHARLES C. BABINGTON.

St. John's College, Cambridge,
April 15, 1837.

ART. LVI.—*Monographia Chalciditum*. BY FRANCIS WALKER.

(Continued from page 364.)

“—— the green myriads in the peopled grass.”

Family ENCYRTIDÆ.

GENUS ENCYRTUS, *Dalman*.

Antennæ 11-articulatæ,^a ad os insertæ: thorax antice angustatus, postice quadratus: prothorax et metathorax minima, vix conspicua: abdomen breve, basi latum; segmentum 1^{um}. magnum; sequentia breviora, subæqualia: pedes plerumque validi; femora recta; tibiæ simplices; tarsorum articuli 1^o. ad 4^{um}. curtantes, 5^{us}. 4^o. longior; ungues et pulvilli parvi; mesopodum tibiæ spinis armatæ, tarsi lati ciliati: proalis nervus humeralis longus, cubitalis mediocris, ulnaris et radialis brevissimi.

Corpus punctatum, nitens, parce et breviter pubescens: caput transversum, mediocre, latitudine thoracis, antice convexum: oculi magni, subrotundi: ocelli in vertice triangulum fingentes, medius antepositus: antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis; 2^{us}. cyathiformis; 3^{us}. et sequentes breves, subcyathiformes, usque ad 8^{um}. late-scentes; clava ovata, articulo 8^o. latior et plus duplo longior: mandibulæ tridentatæ, subquadratæ, non arcuatæ; dentes minuti, acuti: maxillæ longæ, subarcuatæ; lacinia acuminatæ, intus lobatæ; palpi 4-articulati, filiformes, articuli 1^{us}. 2^{us}. et 3^{us}. mediocres, 4^{us}. multo longior fusiformis: labium obconicum; ligula brevis, lata; palpi biarticulati, breves, validi: thorax ovatus, planus: parapsidum suturæ non conspicuæ: paraptera supra convenientia: scutellum obconicum, apice subacuminatum: abdomen ovatum, planum, læve, glabrum, apice acuminatum et parce pubescens, thoracis longitudine: oviductus exertus; vaginæ pubescentes: metapedum femora et tibiæ lata: alæ angustæ. (*Cerchysius*, Westwood.)

Sp. 1. En. urocerus. Fem. *Viridis aut cyaneus, abdomen cupreum, antennæ nigrae, pedes flavi nigro et fusco varia, alæ limpidæ, proalæ fusco plerumque fasciatæ.*

^a Antennæ *E. Jugæ* 9-articulatæ?

Encyrtus urocerus . *Dalman, Kongl. Vetens. Acad. Handl. för år 1820, p. 368.*

Cerchysius urocerus } *Westwood, Lond. and Edin. Phil. Mag.*
et stigmatalis . } *and Journ. of Science, Third Series,*
 1. 127.

Fem.—*Læte viridis*: oculi et ocelli obscure rufi: antennæ nigrae; articulus 1^{us}. *viridis*: mesothoracis epimera et metathorax cuprea: abdomen cupreum, basi viridi varium: oviductus fulvus; vaginae nigra, abdominis dimidio paullo longiores: pedes flavi; coxae virides; propedum femora nigra, tibiae basi fuscae, tarsi obscure fulvi; mesopedum femora nigro-fusca basi et apice flava, tibiae basi fusco-cinctae, tarsi apice fusci; metapedum femora et tibiae nigra, tarsi apice nigro-fusci: alae limpidae; squamulae et nervi nigro-fusca, stigma minutum concolor; proalae cuique apud stigma fascia postice abbreviata fusca. (Corp. long. lin. $\frac{5}{4}$ — $1\frac{1}{4}$; alar. lin. 1 — $1\frac{1}{2}$.)

Var. β.—Mesotibiae omnino flavæ.

Var. γ.—Abdomen basi læte viride: propedum tibiae fuscae, tarsi pallide fusci; mesopedum femora nigra, tibiae nigro-fuscae.

Var. δ.—Thorax cyaneo-viridis: abdomen basi læte viride.

Var. ε.—Mesopedum femora et tibiae flava, illa basi fusca.

Var. ζ.—Proalis fasciæ perfectæ.

Var. η.—Mesothoracis scutum æneo-viride.

Var. θ.—Caput cyaneum: mesothoracis scutum et scutellum cyaneo-viridia: abdomen basi læte viride: mesotibiae nigro-fuscae: proalis fasciæ perfectæ.

Var. ι.—Proalae immaculatæ.

Var. κ.—Mesothoracis scutellum apice æneum: profemora supra fusco-vittata: proalae immaculatæ.

Var. λ.—Thorax omnino viridis: tarsi fusci, apice obscuriores.

Var. μ.—Caput et thorax cyanea: abdomen basi cyaneo-viride: protibiae nigrae: proalis fasciæ perfectæ.

June, July, September; near London, Dorsetshire, Devonshire, Isle of Wight. Found at Port Marnock, Ireland, by Mr. Haliday.

Fem.—Corpus crassum, latum, convexum, nitens, punctatum, parce pubescens: caput transversum, thoracis latitudine, postice concavum; vertex angustus; frons convexa: oculi magni, non extantes: os velut *E. uroceri* formatum: antennæ crassæ, clavatæ, pubescentes; articulus 1^{us}. fusiformis; 2^{us}. longicyathiformis; 3^{us}. et sequentes subquadrati, usque ad 8^{um}. curtantes et late-centes; clava longiovata, articulo 8°. paullo latior et plus duplo longior: thorax breviovatus; scutum transversum; paraptera non convenientia; scutellum rhombiforme: abdomen breviovatum, læve, supra planum, thorace paullo latius vix brevis: oviductus subexertus; vaginæ pubescentes; alæ angustæ.

Sp. 2. En. cyaneus. Fem. *Cyaneus viridi varius*, abdomen viridi-cupreum, antennæ nigræ, pedes fulvi fusco-cincti, alis apices plerumque fuscæ.

Encyrtus cyaneus. Dalman, Kongl. Vetens. Acad. Handl. för år 1820; Nees ab Ess. Hym. Ich. affn. Monogr. II. 228.

Caput nigrum, obscurum: oculi et ocelli picei: antennæ nigræ, corporis dimidio longiores; articulus 1^{us}. fulvus, apice supra fuscus: scutum læte cyaneum: paraptera nigra, obscura: scutellum viride: metathorax nigro-cupreus: abdomen viride, nitens; discus cupreus: pedes fulvi; coxæ virides; femora nigra, apice flava; tarsi apice obscuriores; metatibiæ basi fuscæ; mesopodum tibiæ et tarsi flava, illæ basi fuscæ: alæ sublimpidæ, apice fuscæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. $\frac{5}{4}$ —1 $\frac{1}{2}$.)

Var. β.—Caput nigro-cyaneum: scutum cyaneo-viride: abdomen cupreum, basi cupreo-viride micans.

Var. γ.—*Var. β* similis: antennis articulus 1^{us}. nigro-fuscus, basi fulvus.

Var. δ.—Metatibiæ fuscæ.

Var. ε.—*Var. δ* similis: cyaneus: abdomen cupreum, basi viride: proalæ omnino sublimpidæ, apud stigma fulvescentes.

Var. ζ. Immatura? *Var. ε* similis: antennæ nigro-fuscæ: alæ omnino limpidæ; squamulæ et nervi flava.

Var. η.—Pedes fulvi; femora nigra; metatibiæ fuscæ; mesotibiæ fusco-cinctæ.

Var. θ.—*Var. ε* similis: caput nigro-cyaneum, antennæ nigro-fuscæ, articulus 1^{us}. fulvus: thorax cyaneo-iridis: scutum cyaneum: pedes fulvi; tarsi apice obscuriores; metafemora fusca, apice fulva.

Var. ι.—Viridi-cyaneus: antennis articulus 1^{us}. nigro-fuscus, basi flavus: abdomen cupreum, basi viride: pedes flavi; femora basi fusca; tibiæ fusco-cinctæ; tarsi apice fuscii: protarsi fulvi; metapedum femora et tibiæ fusca: alæ fulvo-limpidæ.

June to October; on grass in fields; Windsor Forest, Hampshire, Isle of Wight, Cumberland, North Wales. Found by Mr. Haliday, near Belfast.

“Bred from a bundle of cocoons attached to a leaf, and covered with cottony yellow wool, like that which envelopes some spiders’ eggs.”—*Curtis’s British Entomology*, 395.

Mas.—Corpus breve, crassum, convexum, punctatum, nitens, parce pubescens: caput transversum, thorace paullo latius; vertex latus; frons abrupte declivis: oculi majusculi: antennæ filiformes pubescentes, corpore paullo longiores; articulus 1^{us}. fusiformis; 2^{us}. cyathiformis, parvus; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes; clava fusiformis, articulo 8^o. fere duplo longior: thorax ovatus: mesothoracis scutum transversum; paraptera non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace brevius non augustius: alæ amplæ.

Sp. 3. En. Batillus. *Mas. Viridis, abdomen cupreum, antennæ fulvæ, pedes flavi, metapedes fuscii, alæ sublimpidæ.*

Viridis: capitis vertex cupreo varius: frons læte viridis: oculi et ocelli obscure rufi: antennæ pallide fulvæ, corporis longitudine; articulus 1^{us}. læte flavus; 2^{us}. supra basi fuscus: scutellum cupreo varium: abdomen nigro-cupreum: pedes flavi; coxæ virides; tarsi fulvi; metapedum femora et tibiæ fusca: alæ sublimpidæ, lætæ, corpore longiores; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Tibiæ fulvo-cinctæ.

Var. γ.—Metafemora et metatibiæ nigro-fusca.

Var. δ.—Mesotarsi flavi apice fuscii.

June, September; on grass in fields; near London, Berkshire, Wales, Devonshire.

Mas.—Corpus breve, crassum, punctatum, pubescens, nitens : caput transversum, convexum, postice concavum ; vertex latus ; frons abrupte declivis : oculi magni : thorax ovatus, convexus ; mesothoracis scutum transversum, paraptera fere convenientia, scutellum rhombiforme : abdomen longi-obconicum supra planum, thorace paullo brevius et angustius : antennæ filiformes, hirtæ, corpore longiores ; articulus 1^{us}. fusiformis, gracilis ; 2^{us}. parvus, subrotundus ; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes ; clava fusiformis articulo 8^o. multo longior vix latior : pedes longi, graciles.

Fem.—Antennæ subclavatæ, corporis longitudine ; articulus 1^{us}. gracilis ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes usque ad 8^{um}. latescentes et curtantes ; clava longi-ovata, articulo 8^o. latior et plus duplo longior : abdomen brevi-ovatum, subtus carinatum, thorace multo brevius vix angustius : oviductus occultus.

Sp. 4. En. Gabinius. *Mas et Fem. Viridis cupreo aut cyaneo varius, abdomen cupreum, antennæ nigræ aut fusæ, pedes flavi fulvo et fusco varii, metapedes nigri, alæ limpidæ.*

Mas.—Læte viridis : oculi et ocelli obscure rufi : antennæ fusæ ; articulus 1^{us}. basi flavus : os fuscum : mesothoracis discus cupreo varius : metathorax cupreus : abdomen cupreum, basi læte viride : propedes fulvi, coxæ femora et tibiæ supra fusco-vittata ; mesopedes pallide flavi ; metapedes nigri, femora subarcuata, tibiæ nigro-fusæ basi et apice fulvæ, tarsi pallide fusci : alæ limpidæ ; squamulæ fusæ ; nervi fulvi.

Var. β.—Mesothorax cyaneo-viridis : mesopedes flavi ; femora et tibiæ fusco-cincta, tarsi fulvi basi flavi ; metapedum tibiæ omnino nigro-fusæ, tarsi fusci.

Var. γ.—Læte cyaneo-viridis : antennæ nigræ ; articulus 1^{us}. fuscus, basi et subtus pallide flavus : abdomen nigro-cupreum, basi læte viride : pedes flavi ; propedum femora et tibiæ supra fulvo-vittata, tarsi fulvi ; mesopedum femora et tibiæ basi fulva, tarsi apice fusci : metapedes nigri, genua et tarsi fusca.

Fem.—Antennæ nigro-fusæ ; articulus 1^{us}. nigro-viridis : scutellum cupreum : abdomen cupreum, basi micans et viridi varium : tarsi fulvi, apice fusci ; propedum femora nigra apice flava, tibiæ fusæ apice fulvæ ; mesopedes flavi, femora fusco-cincta, tarsi pallidiores

apice fuscī; metafemora recta quam *marī* crassiora. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{5}{4}$ —1.)

May, September; on grass in fields, near London. Found by Mr. Haliday in Ireland.

Fem.—Corpus sat longum, nitens, scite punctatum, brevissime pubescens: caput transversum, thorace paullo latius; frons convexa: oculi magni: antennæ clavatæ, hirtæ, corporis dimidio longiores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes subcyathiformes, usque ad 8^{um}. latescentes; clava ovata, articulo 8°. latior et plus duplo longior: thorax ovatus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum brevissime obconicum: abdomen ovatum, planum, læve, subtus carinatum, apice parce hirtum, thorace paullo latius vix longius: oviductus subexertus: alæ angustæ.

Sp. 5. En. Marsus. *Fem. Viridi-cyaneus, abdomen cupreum, antennæ nigræ, pedes fuscī, alæ subfusæ.*

Viridi-cyaneus: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. fuscus, basi et subtus fulvus: abdomen cupreum, basi viridi varium: pedes fuscī; coxæ virides; femora et tibiæ apice fulvæ; pro- et meso-tibiæ fulvæ, basi supra fusæ, trochanteres et tarsi fulvi, hi apice fuscī: alæ subfusæ; squamulæ et nervi fulvæ. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

July; on grass, in fields, near London.

Fem.—Corpus parvum, angustum, punctatum, pubescens, parum nitens: caput transversum, subquadratum, thoracis latitudine; vertex angustus; frons convexa, antice abrupte declivis: oculi magni, non extantes: antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes parvi, breves, usque ad 8^{um}. latescentes; clava fusiformis, articulo 8°. latior et triplo longior: thorax ovatus; mesothoracis scutum transversum, paraptera non convenientia, scutellum breve semicirculum fingens: abdomen ovatum, planum, apice angustum acuminatum, thorace vix brevius: oviductus occultus: pedes graciles: alæ angustæ.

Sp. 6. En. argentifer. (Haliday MSS.) *Fem. Viridis, sericeus, alarum basi ferrugineus, abdomen cupreum, antennæ fusæ flavo cinctæ, pedes fusco-flavi, proalæ fusæ basi limpidæ.*

Viridis: oculi et ocelli obscure rufi: antennis articulus 1^{us}. fuscus, apice flavus; 2^{us}. et 3^{us}. fusci; 4^{us}. et 5^{us}. flavi; 6^{us}. et sequentes nigro-fusci: scutum albo-sericeum: humeri et paraptera ferruginea: scutellum nigrum, obscurum metathorax æneo-viridis, micans: abdomen læte cupreum, basi viridi varium: pedes læte flavi; mesofemora apice fulvo-cincta; metapedum femora et tibiæ fusca, basi hæ apice quoque flava: proalæ fuscæ, basi limpidæ; squamulæ et nervi fulva, hi apice fusci; metalæ limpidæ. (Corp. long. lin. $\frac{1}{3}$; alar. lin. $\frac{1}{2}$.)

Found in the Isle of Arran, by Mr. Haliday.

Fem.—Corpus breve, crassum, punctatum, pubescens, parum nitens: caput subrotundum, thorace paullo latius; vertex latus; frons convexa, ad os abrupte declivis: oculi sat magni, non extantes: antennæ clavatæ, graciles, subcylindricæ, corpore vix breviores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, subquadrati, usque ad 8^{um}. latescentes; clava fusiformis, articulo 8°. paullo latior et triplo longior: thorax ovatus, convexus; mesothoracis scutum transversum, paraptera non convenientia, scutellum obconicum: abdomen brevi-ovatum, planum, subtus carinatum, apice acuminatum, thorace paullo brevius et angustius: oviductus non exertus: pedes longi, graciles: alæ vix ullæ.

Sp. 7. En. Sipylus. Fem. *Nigro-æneus ferrugineo varius*, antennæ nigræ, pedes fulvi, alæ limpidæ.

Nigro-æneus: caput nigro-viride: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. basi et apice fuscus: humeri ferruginei: abdomen æneo-fuscum, basi ferrugineum: oviductus vaginæ nigræ: pedes fulvi; tarsi flavi, apice pallide fusci: alæ limpidæ, mutilatæ. (Corp. long. lin. $\frac{1}{3}$.)

Var. β.—Abdomen basi fuscum: metapedes pallide fusci; tarsi fulvi, apice fusci.

October, on grass in fields, near London.

Mas.—Corpus parvum, angustum, pubescens, nitens, scitissime punctatum: caput transversum, subquadratum, thorace latius; vertex latus, convexus; frons convexa: oculi mediocres, non extantes: antennæ filiformes, pilosæ, corpore longiores; articulus 1^{us}. fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, lineares, subæquales; clava fusiformis, acuminata, articulo 8°. multo longior: thorax ovatus; mesothoracis scutum vix latius

quam longum, paraptera non convenientia, scutellum brevi-obconicum: abdomen ovatum, planum, læve, fere glabrum, apice hirtum, thorace paullo brevius et angustius: sexualia occulta: pedes longi, graciles; mesotarsi parum incrassati: alæ vix ullæ.

Sp. 8. En. Comara. Mas. *Æneo-viridis, abdomen cupreum, antennæ fulvæ, pedes flavi.*

Æneo-viridis: oculi et ocelli picci: antennæ fulvæ; articulus 1^{us}. flavus: abdomen cupreum: pedes flavi; metafemora fusca, apice flava: alæ limpidæ, brevissimæ, volatu ineptæ. (Corp. long. lin. $\frac{1}{2}$.)

Var. β.—Caput et thorax cyaneo-viridia, illius vertex æneo-viridis.

Found near London; also in Ireland, by Mr. Haliday.

Fem.—Corpus angustum, punctatum, pubescens, parum nitens: caput transversum, convexum, thoracis latitudine; vertex angustus; frons convexa, ad os abrupte declivis: oculi magni: antennæ clavatæ, corpore breviores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes transversi, subquadrati, usque ad 8^{um}. latescentes; clava longiovata, articulo 8^o. paullo latior et plus triplo longior: thorax ovatus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum breve rhombiforme: abdomen ovatum, planum, thorace paullo angustius non longius: oviductus occultus: pedes validi: alæ angustæ.

Sp. 9. En. Paralia. Fem. *Nigro-piceus fulvo varius, abdomencupreum, antennæ nigræ albo cinctæ, pedes fusco-flavi, proalæ fusæ basi limpidæ.*

Caput nigrum, obscurum: oculi et ocelli obscure rufi: antennæ nigræ, articulus 1^{us}. fulvus, basi supra fuscus; 2^{us}. nigro-fuscus; 3^{us}. pallidior, apice albidus; 4^{us}. et 5^{us}. albidi: thorax nigro-piceus, parum nitens, antice et utrinque fulvus; paraptera et scutellum fulva: abdomen nigro-cupreum, basi cupreo-viride micans: pedes flavi; femora fusca, basi et apice flava; metatibiæ fusæ, basi et apice flavæ: proalæ fusæ, basi limpidæ; metalæ limpidæ; squamulæ et nervi fulva, hi apud stigma fuscæ. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar lin. $\frac{3}{4}$ —1.)

July; south of France.

Fem.—Corpus breve, crassum, latum, punctatum, pubescens, parum nitens: caput transversum, vix thoracis latitudine, antice subproductum et semicirculum fingens: oculi magni, non extantes:

antennæ clavatæ, crassæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. fusiformis, subtus dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, transversî, usque ad 8^{um}. latescentes; clava longiovata, articulo 8°. paullo latior et triplo fere longior: thorax ovatus, convexus; scutum transversum, paraptera non convenientia, scutellum subrotundum: abdomen rotundum, supra planum, thorace brevius et latius: metatibiæ subarcuatæ.

Sp. 10. En. barbarus. Fem. *Nigro-cyaneus*, abdomen cupreum, antennæ fuscæ albo cinctæ apice nigræ, pedes fulvi, alæ fulvæ.

Encyrtus barbarus. *Dalman, Kongl. Vetens. Acad. Handl. för är, 1820; Nees ab Ess. Hym. Ich. affm. Monogr. II. 211.*

Nigro-cyaneus: oculi et ocelli obscure rufi: antennæ fuscæ; articulus 1^{us}. niger; 7^{us}. et 8^{us}. albidî; clava nigra: abdomen cupreum, nitens, læve, fere glabrum: pedes fulvi; tarsi flavi, apice fuscî; mesopedes flavi: alæ limpidæ, breves, angustæ, apice subfuscæ; squamulæ et nervi fulvæ; stigma minutum; proalæ cuique apud stigma fascia lata fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{2}{3}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Antennis articuli 5^{us}. et 6^{us}. nigro-fuscî.

August, September; near London, North Wales, Scotland. Found at Holywood, Ireland, by Mr. Haliday.

Sp. 11. En. Zarina. Fem. *Cyaneus*, abdomen cupreum, antennæ fusco-fulvæ, pedes fulvi, alæ brevissimæ.

Læte cyaneus: caput viride: oculi et ocelli obscure rufi: antennæ fusco-fulvæ; articulus 1^{us}. fulvus; clava fusca: abdomen cupreum: pedes fulvi; mesopedes flavi, tarsi apice fulvi: alæ sublimpidæ, mutilatæ. (Corp. long. lin. $\frac{2}{3}$.)

Found in Ireland, by Mr. Haliday.

Sp. 12. En. ænei-ventris (Hal. MSS.) Fem. *Fulvus*, abdomen viridi-cupreum, antennæ nigræ, pedes fulvi, alæ brevissimæ.

Læte fulvus: oculi et ocelli picei: antennæ nigræ, pubescentes; articulus 1^{us}. fulvus: scuti discus viridescens; abdomen viridi-cupreum; pedes læte fulvi; tarsi apice obscuriores: mesopedes flavi: alæ limpidæ, mutilatæ, brevissimæ. (Corp. long. lin. $\frac{1}{2}$.)

Var. β.—Scutum omnino fulvum.

Found on heathy hills, in the Isle of Bute, by Mr. Haliday.

Fem.—Corpus breve, latum, crassum, pubescens, scitissime punctatum, parum nitens: caput semicirculatum frangens thoracis latitudine; vertex latus; frons convexa, antice abrupte declivis; antennæ clavatæ, pubescentes, corporis dimidio longiores; articulus 1^{us}. maxime dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes transversi, brevissimi, usque ad 8^{um}. latrescentes; clava brevi-ovata, articulo 8^o. latior et plus duplo longior: thorax breviconicus, planus; mesothoracis scutum transversum, paraptera non convenientia, scutellum subrhombiforme: abdomen subrotundum, supra planum, thorace latius et brevius: oviductus occultus: alæ parvæ aut nullæ.

Sp. 13. En. *Jalysus*. Fem. *Fulvus*, abdomen nigro-cupreum, antennæ nigræ, pedes fulvi, alæ nullæ.

Obscure fulvus: oculi et ocelli picei: antennæ nigræ: abdomen nigro-cupreum, nitens: pedes fulvi; metafemora fusca; tarsi flavi, apice fuscii. (Corp. long. lin. $\frac{2}{3}$.)

September; on Skiddaw, Cumberland.

Fem.—Niger: oculi et ocelli picei: antennæ nigræ, pubescentes; articulus 1^{us}. ater, nitens: abdomen æneo-atrum, nitens, læve, fere glabrum, apice quasi truncatum: pedes fulvi; tarsi apice obscuriores; coxæ nigræ; propedum femora nigro-fusca apice basique flava, tibiæ basi fusca; metapedum femora nigra, tibiæ nigro-fusca: alæ sublimpidæ, angustæ, brevissimæ; proalæ cuique apud stigma fascia lata fusca; squamulæ et nervi fusca.

Mas.—Antennæ submoniliformes, extrorsum crassiores, corporis longitudine; articulus 1^{us}. fusiformis, non dilatatus; 2^{us}. parvus, ovatus; 3^{us}. et sequentes sublineares, usque ad 8^{um}. curtantes vix latrescentes; clava longiovata, articulo 8^o. multo longior vix latior: abdomen quam fem. brevius; segmentum 1^{um}. ejus dorsum fere totum occupans.

Sp. 14. En. *Madyes*. Fem. *Niger*, abdomen æneo-atrum, antennæ mari fusca fem. nigræ, pedes nigro-fusci, fem. alæ fusco fasciatæ.

Antennæ fusca: pro- et mesopedum femora nigro-fusca, basi et apice nigra; tibiæ basi fusca: alæ mutilatæ, vix conspicuæ. (Corp. long. lin. $\frac{1}{4}$ — $\frac{1}{3}$.)

Found on the *Arbutus Uva Ursi*, on the top of Goatfell, in the Isle of Arran, by Mr. Haliday.

Mas.—Corpus parvum, nitens, scitissime squameum, fere glabrum : caput longitudine latius et in ea thoraci æquum ; vertex angustus ; frons abrupte declivis : oculi sat magni : antennæ gracillimæ, extrorsum crassiores, corpore paullo breviores ; articulus 1^{us}. gracilis, fusiformis ; 2^{us}. longi-cyathiformis ; 3^{us}. et sequentes longi, lineares, usque ad 8^{mm}. paullulum curtantes et latescentes ; clava fusiformis, acuminata, articulo 8°. triplo longior vix latior : thorax ovatus, planus ; mesothoracis scutum transversum ; paraptera supra convenientia ; scutellum rhombiforme, postice subproductum : abdomen ovatum, planum, ac si thorax longum et latum : sexualia subexerta.

Fem.—Antennis clava quam *mari* longior et latior : abdomen longiovatum, thorace paullo longius : oviductus subexertus.

Sp. 15. En. Imandes. *Mas et Fem. Cyaneus, abdomen nigro-cupreum, antennæ fusæ, pedes flavo-fusci, femora nigra, alæ subfusæ.*

Cyaneus : caput nigrum : os flavum : palpi fusci : oculi et ocelli picei : antennæ *mari* fusæ, *fem.* nigro-fusæ ; articulus 1^{us}. niger : abdomen nigro-cupreum : sexualia fusca : pedes nigri ; tibiæ flavæ, basi fusæ ; tarsi fulvi ; metatibiæ nigro-fusæ, apice flavæ : alæ subfusæ ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{3}$ — $\frac{1}{2}$; alar. lin. $\frac{2}{5}$ — $\frac{3}{4}$.)

Var. β.—*Mas* metatibiæ fulvæ, basi fusæ.

Var. γ.—*Fem.* thorax purpureo-cyaneus.

July ; on grass in woods, near London.

Fem.—Corpus crassum, squameum, nitens, pubescens : caput convexum longitudine latius et in ea thoraci æquum ; vertex latus ; frons subimpressa, abrupte declivis : oculi mediocres : antennæ subclavatæ, graciles, corporis dimidio paullo longiores ; articulus 1^{us}. gracilis, fusiformis ; 2^{us}. longicyathiformis ; 3^{us}. et sequentes parvi, transversi, subcyathiformes, usque ad 8^{mm}. latescentes ; clava fusiformis, acuminata, articulo 8°. plus quadruplo longior : thorax brevi-ovatus, planus ; mesothoracis scutum transversum ; paraptera non convenientia ; scutellum rhombiforme : abdomen ovatum, planum, thorace paullo latius non longius : oviductus occultus : pedes graciles.

Sp. 16. En. Chaerilus. Fem. *Æneo-viridis*, abdomen nigro-cupreum, antennæ nigræ, pedes fuscæ, alæ subfuscæ.

Æneo-viridis: oculi et ocelli rufi: antennæ nigræ; articulus 1^{us}. nigro-viridis: abdomen nigro-cupreum: pedes fuscæ; genua fulva; tarsi flavi, apice fuscæ: alæ subfuscæ; squamulae et nervi fuscae. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{4}$.)

September; roots of grass, sandhills, North Wales.

Fem.—Corpus breve, latum, crassum, punctatum, obscurum, albo-hirtum: caput magnum, brevissimum, non aliter thorace latum, ad os abrupte declivis: mandibulae bidentatae, angustae, arcuatae; dentes acuti, subaequales: maxillae longae, subarcuatae; laciniae acuminatae, intus dilatatae; palpi filiformes, graciles, articulus 2^{us}. 1^o. longior, 3^{us}. adhuc longior, 4^{us}. fusiformis 3^o. longior: labium angustum, obconicum; ligula brevis, lata, conica: palpi biarticulati, breves, subfiliformes: antennae extrorsum crassiores, corpore paullo breviores; articulus 1^{us}. longissimus, fusiformis, subtus dilatatus; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes longi, sublineares, usque ad 8^{um}. curtantes et paullo latescentes; clava fusiformis, articulo 8^o. duplo longior et paullo latior: thorax subquadratus, convexus: mesothorax dorsum omne occupans; segmenta maxima; parapsidum suturae non conspicuae; paraptera supra non convenientia; scutellum rhombiforme: pectoris laminae maximae: abdomen planum, subtus carinatum, apice compressum et acuminatum; segmentum 1^{um}. maximum: segmenta ventralia occulta: oviductus non exertus: pedes validi.

Mas.—Corpus quam *fem.* angustius: caput antice convexum: antennae filiformes, corporis longitudine; articulus 1^{us}. non dilatatus; 2^{us}. cyathiformes; 3^{us}. et sequentes ad 8^{um}. curtantes; clava articulo 8^o. multo longior: abdomen ovatum, subtus convexum, thorace brevius.

Sp. 17. En. hemipterus. Mas et Fem. *Nigro-æneus*, antennæ nigræ, tarsi et mari mesopedes pallidi, alæ bifasciatae aut vix ullæ.

Encyrtus hemipterus. Dalman, Kongl. Vetens. Acad. Handl. för år, 1820; Nces ab Ess. Hym. Ich. affin. Monogr. II. 252.

Nigro-æneus, obscurus, unicolor: oculi et ocelli obscure rufi: palpi flavi, apice fuscæ: antennæ nigræ, brevissime pubescentes; articulus 1^{us}. nigro-æneus; clava apice fusca: trophi flavi: pectoris

laminæ nigro-cyaneæ: pedes nigro-ænei; genua et protarsi fusca; meso- et metatarsi flavi, apice fusci: alæ fuscae, mutilatae, subco-riaceae. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. 1.)

Mas.—Abdomen cupreum: tarsi fusci: mesopedes fulvi, femora fusca.

Var. β.—*Fem.* protarsi fulvi.

Var. γ.—*Fem.* caput et thorax nigro-viridia.

Var. δ.—*Fem.* alæ perfectæ, fuscae; squamulae et nervi obscuriora, horum cubitalis crassus; proalæ cuique fasciæ 2, apicalis lunata alba; metalæ sublimpidæ.

June, September; on ferns; Hampshire, Isle of Wight, Wales, Cumberland, Dorsetshire, Devonshire, Cornwall, Ireland, Auvergne.

Fem.—Corpus crassum, latum, nitens, glabrum, scitissime punctatum: caput brevissimum, thoracis latitudine; vertex latus, convexus; frons abrupte declivis: oculi mediocres: antennæ extrorsum crassiores, corpore vix breviores; articulus 1^{us}. longissimus, gracilis, subfusiformis; 2^{us}. longus, linearis, 3^{us}. et sequentes longi, linearis, usque ad 8^{um}. paullulum latescentes et curtantes; clava longi-ovata, articulo 8^o. duplo fere longior vix latior: thorax oblongus, subquadratus, convexus: prothorax supra conspicuus: mesothoracis scutum breve, transversum; paraptera magna, supra convenientia; scutellum rhombiforme: metathorax sat bene determinatus: abdomen ovatum, supra planum, subtus carinatum, basi latum, apice angustum et acuminatum: alæ angustæ.

Sp. 18. En. Lindus. Fem. Cyaneo-fulvus, antennæ fuscae apice flavæ, pedes fulvi, alæ subfuscae aut nullæ.

Fulvus: capitis vertex et thoracis discus cyaneo-fusca: oculi et ocelli rufi: antennæ fuscae; articulus 1^{us}. fulvus; 2^{us}. basi et subtus fulvus; clava pallide flava, basi fusca: abdominis discus cyaneo-fuscus: pedes fulvi; tarsi flavi, apice fusci; protarsi obscure fulvi; metapedum femora et tibiæ supra fusca: alæ subfuscae; squamulae et nervi fusca; proalæ cujusque apicem versus fasciæ lunata alba. (Corp. long. lin. $\frac{1}{4}$ — $\frac{3}{4}$; alar. 1 $\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. supra apice fuscus; 3^{us}. et sequentes ad 9^{um}. nigro-fusci: alæ nullæ.

June; on chalk downs, Isle of Wight.

Fem.—Corpus angustum, scitissime squameum, parce et breviter pubescens: caput breve, antice convexum, thorace paullo angustius: antennæ gracillimæ, fere filiformes, corpore longiores; articulus 1^{us}. longissimus, gracilis, linearis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, lineares; clava longissima, linearis, articulo 8^o. paullo latior et plus duplo longior: thorax ovatus, subconvexus: mesothoracis scutum longitudine latius; parapsidium suturæ non conspicuæ; paraptera supra non convenientia; scutellum subrhombiforme: abdomen læve, planum, subtus carinatum, apice compressum et acuminatum, thoracis longitudine at eodem multo angustius: oviductus subexertus: pedes longi, graciles: alæ angustæ.

Sp. 19. En. Anceus. Fem. *Viridis sericeus, abdomen cupreo-æneum, antennæ nigræ, pedes flavi, alæ limpidæ.*

Læte viridis, quasi sericeus: oculi et ocelli rufi: antennæ nigræ, vix pubescentes: abdomen cupreo-æneum, nitens, glabrum, apice parce pubescens: oviductus vaginæ, nigræ, pubescentes: pedes læte flavi; tarsi apice fusi: alæ limpidæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{5}{4}$; alar. lin. $1\frac{1}{4}$.)

Var. β.—Metapedum femora et tibiæ fusco fasciata.

July, September; on lauristinus and ivy, near London, North Wales.

Sp. 20. En. Didius. Fem. *Viridis aut cupreus, sericeus, antennæ nigræ aut fusæ, pedes flavi, mesopedes nigri, alæ limpidæ.*

Læte viridis, sericeus: capitis vertex viridi-æneus: oculi et ocelli obscure rufi: antennæ nigræ; articulus 1^{us}. nigro-viridis, apice fuscus; 2^{us}. apice fuscus: humeri albi: mesothoracis scutum antice cupreum; scutellum obscure cupreum: metathorax æneus: abdomen cupreum, basi viride, apice parce pubescens: oviductus vaginæ nigræ, pubescentes: pedes pallide flavi; coræ virides; tarsi apice fulvi; propedum femora et tibiæ extus fulvo vittata, tarsi fulvi; metapedum femora et tibiæ nigra apice basique flava, tarsi apice fusi: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Var. β.—Mesopedum femora basi fusca; tibiæ fusæ, basi et apice flavæ.

Var. γ.—*Var. β* similis: antennæ fusæ; articulus 1^{us}. viridis; 2^{us}. niger.

Var. δ.—Caput et thorax cupreo-ænea.

Var. ε.—Caput viride: thorax æneo-viridis, cupreo varius.

July to September; on grass in fields, near London; Devonshire.

Mas.—Corpus angustum, sublineare, nitens, scite punctatum, pubescens: caput breve, transversum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: thorax longiovatus, fere planus: mesothoracis scutum latitudine paullo longius; paraptera fere convenientia; scutellum brevi-obconicum: abdomen ovatum, planum, læve, fere glabrum, thorace brevius vix angustius, apice hirtum: antennæ longæ, filiformes, pilosæ; articulus 1^{us}. fusiformis; 2^{us}. subrotundus, parvus; 3^{us}. et sequentes longi, æquales, sublineares; clava fusiformis, acuminata, articulo 8^o. multo longior non latior.

Sp. 21. En. melanopus (Haliday MSS.) *Mas. Viridis, abdomen cupreum, antennæ fusæ, pedes nigro-fusci, mesopedes flavi, alæ limpidae.*

Læte viridis: oculi et ocelli obscure rufi: antennæ fusæ, subtus fulvæ, corpore vix breviores; articulus 1^{us}. flavus, subdilatus, supra apicem versus niger; 2^{us}. supra nigro-fuscus: humeri læte flavi: abdomen cupreum, basi et utrinque viride: sexualia flava: pro- et metapedum femora et coxæ viridia, illa apice fulva; tibiæ nigro-fusæ, subtus pallidiores, apice fulvæ; tarsi pallide fusci: mesopedes flavi; tibiæ basi et tarsi apice fusca: alæ limpidae; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{1}{2}$ —1; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β.—Antennis articulus 1^{us}. nigro-viridis; 2^{us}. nigro-fuscus: propedes fusci, femora fulva supra viridi vittata, tibiæ supra et apice fulvæ; mesotibiæ omnino flavæ; metapedum tibiæ nigræ, tarsi fusci basi flavi.

July, October; near London. Found in August on the coast near Belfast, by Mr. Haliday.

Sp. 22. En. subplanus. *Mas. Præcedenti similis at angustior, antennæ longiores graciliores fulvæ.*

Encyrtus subplanus. Dalman, *Kongl. Vetens. Acad. Handl. för är*, 1820; Nees ab Ess. *Hym. Ich. affin. Monogr.* II. 245.

Mas.—Læte viridis, micans: oculi et ocelli rufi: antennæ fulvæ,

corporis longitudine; articuli 1^{us}. et 2^{us}. supra virides: humeri læte flavi: abdomen cupreum, basi viridi-cyaneum: pedes læte flavi; coxæ virides; tarsi apice fuscii; propedum femora basi nigra, tibiæ extus fusco vittatæ, tarsi fulvi; mesopedum femora fulva apice flava, tibiæ basi supra fusco maculatæ; metapedum femora et tibiæ nigra, tarsi fuscii basi flavi: alæ limpidæ; squamulæ et nervi fulva, hi apice fuscii. (Corp. long. lin. $\frac{3}{4}$ —1; alar. lin. $1\frac{1}{4}$ — $1\frac{1}{2}$.)

May, September; on grass in fields, near London, Wales, Isle of Wight.

Sp. 23. En. Gellius. Mas. E. subplano *adhuc gracilior multoque minor*.

Viridis, quasi sericeus: capitis vertex viridi-æneus: oculi et ocelli obscure rufi: antennæ fulvæ, corporis longitudine; articulus 1^{us}. viridis, basi et apice flavus; 2^{us}. basi fuscus: mesothoracis scutum antice cupreum; scutellum obscure cupreum: metathorax æneus: abdomen cupreum, basi viride: pedes pallide flavi; coxæ virides; tarsi apice fulvi; propedum femora et tibiæ extus fulvo vittata, tarsi fulvi; mesopedum femora basi fusca, tibiæ fuscæ basi et apice flavæ; metapedum femora et tibiæ nigra apice basique flava, tarsi apice fuscii: alæ limpidæ; squamulæ et nervi pallide fusca: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{1}{2}$; alar. lin. $\frac{5}{8}$.)

September; on grass in fields; near London.

Mas.—Corpus longum, sublineare, nitens, scite punctatum, brevissime pubescens: caput transversum, convexum, subquadratum, latitudine thoraci æquum; vertex latus; frons abrupte declivis: oculi medioeres: antennæ graciles, filiformes, pilosæ aut pubescentes, corpore paullo longiores; articulus 1^{us}. fusiformis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, lineares, discreti, usque ad 8^{um}. paullulum curtantes; clava fusiformis, acuminata, articulo 8^o. multo longior: thorax ovatus, planus: mesothoracis scutum vix latius quam longum; paraptera fere convenientia; scutellum obconicum: abdomen ovatum, planum, thorace paullo brevius et angustius: alæ amplæ.

Sp. 24. En. Glaphyra. Mas. *Viridis æneo et cyaneo varius, abdomen cupreum, antennæ nigræ aut fuscæ pilosæ, pedes nigro-fuscæ, tarsi flavi, alæ sublimpidæ*.

Viridis: caput æneo-varium: oculi et ocelli picci: antennæ nigræ;

articulus 1^{us}. nigro-viridis: abdomen cupreum, basi micans: coxæ et femora nigro-viridia; tarsi flavi, apice fusci; meso- et metatibiæ nigro-fuscæ, basi albidæ, apice flavæ; protibiæ et pro-tarsi pallide fusca: alæ sublimpidæ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{3}{4}$ —1.)

Var. β.—Femora nigro-fusca, apice flava; tibiæ pallidiores; protibiæ flavæ, basi supra fusca.

Var. γ.—Thorax æneo-viridis.

Var. δ.—Caput et thorax cyaneo-viridia.

Var. ε.—*Var. β* similis: mesotibiæ flavæ, fusco cinctæ.

Var. ζ.—Antennæ nigro-fuscæ.

Var. η.—Metapedum tibiæ nigræ, basi et apice pallide flavæ; tarsi fulvi, apice fusci.

Var. θ.—Antennis articuli 3^o. ad 11^{um}. pallide fusci.

May to September; on grass in fields; near London, Berkshire, Isle of Wight, Dorsetshire, &c.

Sp. 25. En. Mattinus. Mas. *Cyaneo-viridis*, abdomen cupreum, antennæ fusca pubescentes, pedes fusco-fulvi, metapedes nigri, alæ sublimpidæ.

Mas.—Cyaneo-viridis: capitis frons læte viridis: oculi et ocelli picei: palpi fusci: antennæ fuscæ; articulus 1^{us}. flavus, apice supra fuscus: abdomen cupreum, basi cyaneum: pedes fulvi; coxæ virides; femora et tibiæ pallide fusca, basi et apice fulva; metapedum femora et tibiæ nigra: alæ sublimpidæ, latæ. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β.—Profemora flava.

May, September; on grass in fields; near London, Hampshire.

Mas.—Corpus longum, lineare, punctatum, subnitens, parce et breviter pubescens: caput brevissimum, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ subfiliformes, planæ, pubescentes, corpore vix breviores; articulus 1^{us}. fusiformis, gracilis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, lineares, usque ad 8^{um}. paullulum curtantes; clava fusiformis, articulo 8^o. plus dimidio longior: thorax ovatus, convexus; mesothoracis scutum longitudine vix latius; paraptera non convenientia; scutellum obconicum, basi utrinque angulatum:

abdomen ovatum, planum, longum et latum ac si thorax : alæ longæ

Sp. 26. En. serricornis ? Mas. *Viridis aut æneus, scutellum et abdomen cuprea, antennæ nigræ, pedes nigro-fuscae, mesopedes pallidiores, alæ limpidae.*

Encyrtus serricornis ? *Dalman, Kongl. Vetens. Acad. Handl. för år, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 214.*

Encyrtus chalconotus ? *Ditto ditto. 232.*

Læte viridis, nitens : gula et os fulva : oculi et ocelli obscure rufi : antennæ nigræ ; articulus 1^{us}. nigro-viridis : thorax subtus æneo-viridis, cyaneo varius : humeri albi : scutellum cupreum : metathorax nigro-cupreus : abdomen nigro-cupreum, basi micans : oviductus subexertus ; vaginæ nigræ : pedes nigri ; coxæ virides ; genua flava ; tarsi flavi, apice fusci ; propedum femora nigro-fusca, tibiæ fuscae, tarsi fulvi ; mesopedum femora et tibiæ fulva, apice basique flava : alæ limpidae ; squamulae et nervi fulva, hi apice obscuriores. (Corp. long. lin. $\frac{2}{3}$ — $\frac{3}{4}$; alar. lin. 1—1 $\frac{1}{4}$.)

Var. β .—Cyaneo-viridis : capitis vertex postice cupreus : antennæ fuscae ; articulus 1^{us}. nigro-viridis ; 2^{us}. niger : abdomen cupreum, basi viride : pro- et metagenua fulva ; mesotibiæ fuscae ; metapedum tibiæ nigro-fuscae, tarsi fulvi apice fusci.

Var. γ .—Protarsi pallide fusci : mesopedum femora nigro-fusca, apice flava ; tibiæ fuscae : metatarsi fulvi, apice fusci.

Var. δ .—Capitis vertex æneus : scutum cyaneo-viride, antice cupreum ; mesopedum femora nigra, apice flava.

Var. ϵ .—Caput et thorax ænea.

September ; Dorsetshire, Cornwall. Found in August on the coast near Belfast, by Mr. Haliday.

Mas.—Corpus angustum, nitens, scite punctatum, fere glabrum : caput transversum, convexum, thoracis latitudine ; vertex latus ; frons abrupte declivis : oculi mediocres : antennæ filiformes, pilosæ, corpore vix breviores ; articulus 1^{us}. fusiformis, subtus dilatatus ; 2^{us}. parvus, brevi-cyathiformis ; 3^{us}. et sequentes longi, æquales, sublineares ; clava fusiformis, acuminata, articulo 8°. multo longior : thorax longi-ovatus fere planus ; mesothoracis scutum transversum ; paraptera non convenientia ; scutellum obconicum : abdomen ovatum, planum, thorace brevius vix angustius.

Sp. 27. En. Anebus. Mas. *Viridis, abdomen cupreum, antennæ nigræ, pedes nigro-fusci, tarsi flavi, alæ limpidae.*

Læte viridis: capitis vertex cupreo varius: oculi et ocelli picei: antennæ nigræ; articulus 1^{us}. viridis: abdomen nigro-cupreum: sexualia fulva: propedes fulvi, femora nigra, tibiæ fusco cinctæ; mesopedes flavi, femora nigra, tibiæ fusco-cinctæ, tarsi flavi apice fulvi; metapedum femora et tibiæ nigra, genua fulva, tarsi flavi apice fusci: alæ limpidae; squamulæ fuscae; nervi fulvi, apice fusci. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β .—Capitis vertex cupreus: thorax cupreo-viridis.

June; Hampshire, Isle of Wight.

Mas.—Corpus breve, crassum, scabre punctatum, parce pubescens, parum nitens: caput transversum, breve, convexum, thorace paullo latius; vertex latus; frons abrupte declivis: antennæ submoniliformes, pilosæ, corporis longitudine; articulus 1^{us}. gracilis, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes ad 8^{um}. longi, æquales, sublineares, discreti; clava longi-ovata, articulo 8°. latior et multo longior: thorax ovatus, altus, fere planus: mesothoracis scutum vix longitudine latius; paraptera non convenientia; scutellum obconicum: abdomen brevi-ovatum, planum, læve, nitens, fere glabrum, thorace paullo angustius et plus dimidio brevius: pedes longiusculi.

Sp. 28. En. Aralius. Mas. *Viridi-æneus, antennæ fuscae aut fulvæ, pedes nigro-fuscae, femora viridia, mesopedes fusco-fulvæ, alæ limpidae.*

Æneo-viridis: caput viride: oculi et ocelli obscure rufi: antennæ nigro-fuscae; articulus 1^{us}. viridis; 2^{us}. niger: scutellum viridi-æneum: abdomen cupreo-æneum, viridi varium: pro- et metapedum coxæ et femora viridia; genua fulva; tibiæ nigræ; tarsi fulvi, apice fusci: mesopedum femora et tibiæ fusca, hæ apice fulvæ; genua flava; tarsi pallide fulvi, apice fulvo-fusci: alæ limpidae; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{2}{3}$ —1.)

Var. β .—Thorax viridis: scutellum æneo-viride.

Var. γ .—Thorax æneus: caput viridi-æneum: protibiæ nigro-fuscae, apice fulvæ: mesotarsi flavi, apice fusci: alarum nervi fulvi, apice obscuriores.

Var. δ.—Antennæ fulvæ; articulus 1^{us}. viridis; 2^{us}. niger: scutellum æneum: abdomen nigro-æneum: genua flava; tarsi pallide fusci: mesopedum tibiæ apice flavæ; tarsi flavi, apice fusci; pro-tibiæ nigro-fuscæ: alarum nervi fulvi, apice obscuriores.

September; near London, Isle of Wight.

Mas.—Corpus breve, crassum, pubescens, subnitens, scite punctatum: caput transversum, breve, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ filiformes, pilosæ, corporis longitudine; articulus 1^{us}. gracilis, fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes longi, lineares, approximati, usque ad 8^{um}. curvantes; clava fusiformis, acuminata, articulo 8^o. multo longior non latior: thorax ovatus, convexus: mesothoracis scutum transversum; paraptera non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace multo brevius vix angustius.

Sp. 29. En. Teuteus. *Mas. Cyaneo-viridis, abdomen æneum, antennæ nigro-fuscæ, pedes fusci, mesopedes fulvi, alæ limpidæ.*

Cyaneo-viridis: caput nigrum, obscurum, postice æneum: oculi et ocelli obscure rufi: antennæ nigro-fuscæ; articulus 1^{us}. basi fulvus: metathorax æneus: abdomen cupreo-æneum, viridi varium: propedes fusci, genua et tarsi pallidiora: mesopedes lacti fulvi, tarsi apice obscuriores: metapedes nigro-fusci, genua fulva, tarsi pallide fusci: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Found near London.

Mas.—Corpus sublineare, pubescens, subnitens, scite punctatum: caput transversum, breve, convexum, thoracis latitudine; vertex latus; frons abrupte declivis: oculi mediocres: antennæ filiformes, pubescentes, corpore paullo breviores; articulus 1^{us}. gracilis, fusiformis; 2^{us}. cyathiformis, brevis; 3^{us}. et sequentes ad 8^{um}. longi, lineares, subæquales; clava fusiformis, articulo 8^o. fere duplo longior: thorax longi-ovatus, convexus: mesothoracis scutum transversum; paraptera non convenientia; scutellum obconicum: abdomen ovatum, planum, thorace brevius.

Sp. 30. En. Aithya. *Mas. Viridis aut cupreus, antennæ fuscæ, pedes fusci, tarsi pallidiores, alæ limpidæ.*

Viridis: oculi et ocelli obscure rufi: antennæ fuscæ; articuli 1^{us}. et

2^{um}. nigri: thorax cupreo-varius: abdomen nigro-cupreum: sexualia fusca: pedes nigro-fusci; genua fulva; tarsi pallide fusci; mesotarsi flavi, apice fusci: alæ limpidæ; squamulæ et nervi pallide fusca. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

Var. β .—Caput cupreo varium: thorax omnino cupreus.

Var. γ .—Genua et tarsi flava, hi apice fusci: protarsi fulvi.

July, September; near London, Cornwall.

Mas.—Corpus crassum, punctatum, pubescens, parum nitens: caput thoracis latitudine, transversum, breve, convexum; vertex latus; frons abrupte declivis: oculi mediocres: thorax ovatus, altus, convexus: mesothoracis scutum transversum; paraptera fere convenientia; scutellum obconicum: abdomen ovatum, planum, thorace paullo brevius multo angustius; antennæ longitudine corporis, filiformes, pubescentes, articulus 1^{us}. gracilis, fusiformis; 2^{us}. subrotundus; 3^{us}. et sequentes longi, sublineares, usque ad 8^{um}. paullulum curtantes; clava fusiformes, acuminata, articulo 8^o. multo longior non latior: pedes longi.

Sp. 31. En. Sphærus. Mas. *Niger aut viridis, abdomen cupreum, antennæ nigro-fuscæ, pedes nigro-fusci, tarsi pallidiores, alæ albæ.*

Niger: oculi et ocelli picei: antennæ nigro-fuscæ; articulus 1^{us}. niger: abdomen nitens, læve, fere glabrum: sexualia fusca: pedes nigro-fusci; genua fulva; tarsi pallide fusci: alæ albæ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{3}$ — $\frac{2}{3}$; alar. lin. $\frac{1}{2}$ — $\frac{5}{4}$.)

Var. β .—Pedes fusci; tarsi flavi, apice obscuriores.

Var. γ .—Viridis: antennis articulus 1^{us}. viridis: scutellum cupreo-ræneum: abdomen nigro-cupreum: mesotarsi basi et subtus flavi.

Var. δ .—Var. γ similis: antennæ nigro-fuscæ; articulus 1^{us}. fuscus, basi flavus: scutum viridi-cupreum.

September; near London, North Wales, Dorsetshire.

Mas.—Corpus longum, angustum, scite squameum, parce pubescens, parum nitens: caput thoracis latitudine, transversum, breve; vertex convexus; frons abrupte declivis: oculi mediocres: antennæ subserratæ, corporis longitudine; articulus 1^{us}. fusiformis; 2^{us}. brevis, cyathiformis; 3^{us}. et sequentes ad 8^{um}. latiores, cyathi-

formes, subæquales; clava fusiformis, articulo 8°. duplo longior: thorax longi-ovatus, planus: mesothoracis scutum ut latum sic longum; paraptera non convenientia; scutellum brevi-obconicum: metathorax bene determinatus: abdomen longi-ovatum, depressum basi angustius, thoracis longitudine: pedes sat longi; meta-femora subclavata.

Sp. 32. En. Machæras. Mas. *Cupreus, antennæ fusæ, pedes fulvo-fusci, femora nigra, alæ limpide.*

Cupreus: oculi et ocelli picei: antennæ pallide fusæ; articuli 1^{us}. et 2^{us}. nigro-ænei, hic apice et ille basi fulvi: metathorax nigro-cupreus: scutellum et abdomen nigro-cuprea, hoc nitens læve fere glabrum: sexualia fusca: pedes fusci; coxæ et femora nigra, hæ apice albida; tibiæ basi albidae; tarsi fulvi; mesotarsi flavi, apice fusci: alæ limpidae; squamulae et nervi fulva, hi apud stigma obscuriores. (Corp. long. lin. $\frac{2}{3}$; alar. lin. 1.)

September; on grass in fields, near London.

Fem.—Corpus breve, sublineare, punctatum, nitens, pubescens: caput transversum, breve, convexum, thoracis latitudine; frons abrupte declivis: antennæ clavatae, graciles, corporis dimidio vix breviores; articulus 1^{us}. fusiformis, gracilis; 2^{us}. longi-cyathiformis; 3^{us}. et sequentes breves, subquadrati, usque ad 8^{um}. late-scentes et curtantes; clava longi-ovata, articulo 8°. paullo latior et plus duplo longior: thorax ovatus, planus: mesothoracis scutum transversum; paraptera supra non convenientia; scutellum brevi-obconicum: abdomen brevi-ovatum, planum, thorace paullo latius vix brevius, subtus convexum, apice acuminatum: oviductus occultus: alæ amplæ.

Mas.—Corpus quam *fem.* angustius: antennæ moniliformes, verticillato-pilosæ, corporis dimidio longiores; articulus 2^{us}. subrotundus, parvus; 3^{us}. et sequentes ad 8^{um}. discreti, subtrigoni; clava longi-ovata, articulo 8°. duplo longior non latior: abdomen thorace non latius.

Sp. 33. En. subcupratus. Mas et Fem. *Cupreus, antennæ mari fulvæ fem. fusæ, pedes flavi, metapedes aneo-fusci, alæ limpide.*

Encyrtus subcupratus. Dalman, Kongl. Vetens. Acad. Handl. för år, 1820; Nees ab Ess. Hym. Ich. affin. Monogr. II. 252.

Fem.—Cupreus: caput viridi-æneum, subtus viride: oculi et ocelli

obscure rufi : antennæ fuscæ : thorax subtus cyaneo-viridis : abdomen cupreum, læve, sere glabrum, basi viridi varium : pedes læte flavi ; coxæ cupreæ ; tarsi apice fusci : metapedum femora nigro-ænea, tibiæ nigro-fuscæ apice basique flavæ ; alæ limpidae, fulvo subinctæ, corporis longitudine ; squamulæ et nervi fulva. (Corp. long. lin. $\frac{1}{2}$ — $\frac{3}{4}$; alar. lin. $\frac{5}{4}$ —1.)

Mas.—Antennæ fulvæ ; articuli 1^{us}. et 2^{us}. supra fusci.

Var. β.—*Fem.* Abdomen basi omnino viride.

Var. γ.—*Fem.* Caput læte viride, antice viridi-cyaneum, postice viridi-æneum : thorax antice æneo-viridis.

Var. δ.—*Mas.* Thoracis scutum viridi varium.

Var. ε.—*Mas.* Caput et thorax viridia : scutellum cupreum.

April, May, July to September ; on grass in woods near London, North Wales, Scotland. Found in Ireland by Mr. Haliday.

Sp. 34. En. coniferæ. (Haliday MSS.) *Mas* et *Fem.* *Viridis aut cupreus, antennæ fulvæ, pedes mari fusci fem. flavi, metapedes nigri, alæ limpidae.*

Fem.—Viridis, cupreo-varius : caput antice viridi micans : oculi et ocelli obscure rufi : antennæ fulvæ ; articuli 1^{us}. et 2^{us}. fusci, apice flavi : mesothoracis scutellum apice cupreum : abdomen læte cupreum : pedes flavi ; tarsi apice fusci ; protibiæ et protarsi fulva ; metafemora et metatibiæ nigra, basi et apice flava : alæ limpidae ; squamulæ et nervi fulva, hi apice obscuriores.

Var. β.—Scutellum cupreum : abdomen basi viridi-cupreum.

Var. γ.—*Var. β* similis : caput postice cupreum : scuti discus cupreus.

Var. δ.—Antennis articuli 1^{us}. et 2^{us}. apice fulvi ; 3^{us}. et sequentes fusco-fulvi.

Var. ε.—Antennæ fuscæ : caput et thorax supra cuprea.

Mas.—Cupreus, nitens : oculi et ocelli obscure rufi : antennæ fulvæ ; articuli 1^{us}. et 2^{us} fusci : abdomen nigro-cupreum : pedes flavi ; coxæ æneæ ; pro- et mesopedum femora et tibiæ nigro-fusca, basi et apice flava : pro- et metatarsi fulvi : metafemora et metatibiæ nigra : alæ limpidae ; squamulæ et nervi fusca. (Corp. long. lin. $\frac{1}{2}$ — $\frac{5}{4}$; alar. lin. $\frac{3}{4}$ — $1\frac{1}{4}$.)

Var. β—Antennis articuli 1^{us}. et 2^{us} nigri.

September ; Dorsetshire, Devonshire. Found in Ireland, by Mr. Haliday.

ART. LVII.—*Notes of a Voyage to Alten, Hammerfest, &c.*
By WILLIAM CHRISTY, Jun. [Note.—The Entomological
Remarks are mostly added from MR. WALKER'S Notes.]

1836, *July 12*.—After a pleasant voyage from the Thames, of twelve days, we were roused by the cry of land, and, on coming on deck, were gratified by a sight of the magnificent range of the Lofoden Islands, whose mountains, of great height, and in many places capped with snow, were glittering in the rays of the morning sun. Several large whales were sporting about, and spouting the water to a considerable height, with a noise resembling that occasioned by the ascent of a large rocket. A fine specimen of that rare British fish the Bergylt (*Sebastes Norregicus*,) was procured, and Coal-fish, (*Merlangus carbonarius*,) were leaping from the water in great numbers.

13th.—In our passage along the Lofoden Isles, we were much amused in witnessing the piratical propensities of the Arctic Gull (*Lestris Richardsoni*,) exercised among the immense flocks of gulls, kittiwakes, &c., which were flying round us. From some of the latter which were shot, we procured two species of parasites. We fell in with a fishing boat, from which we obtained a large halibut, some cod, ling, and torsk, (*Brosmius vulgaris*, Cuv.)

On the skin of the halibut were numerous flat, oval, white bodies, probably parasites, and the liver was infested with small vermes about an inch long, rolled in circles. On various parts of the bodies of most of the fish were observed numerous parasitical entomostracous animals, belonging to the genus *Pandarus*. They were probably *P. alatus*, Milne Edwd., although certainly much resembling *P. Lannæ*, Johnst. (*Mag. Nat. Hist.* viii. p. 204.) When placed in a phial of water they swam about vigorously, using their fins,^a which move by pairs, with a quick abrupt motion. Antennæ short, projecting beyond the head, branched, ciliate, terminated by setæ. Two long filaments at the extremity of the abdomen, with four or five joints. Colour pale yellow. Another and smaller kind, was paler and more transparent, and had three

^a Pattes thoraciques, Edwards.

red setæ on each side of the extremity of the abdomen, which was shorter, and wanted the long filaments. Perhaps it was only the other sex, as, according to Milne Edwards and Johnstone, these appendages are peculiar to the females. Those which we found with filaments were evidently females, from the bunches of ova beneath the abdomen.

14th.—We passed the Island of Fugeloe, which we viewed with much interest, as being one of the various spots on the Norwegian coast, where the skeletons of whales are said to occur on the summits of mountains. Unfortunately we were outside a dangerous reef, and could not land to visit it. With the telescope we could discern nothing of the kind; but this might be owing to the highest ridges being still covered with snow. The sunset, if it may be so called, was the most beautiful we had yet seen. At midnight the sun was considerably above the horizon, and the sky was literally without a cloud. The whales and gulls were as numerous and active as during the day, and it is difficult to know when these creatures sleep in summer time.

15th.—This morning we found ourselves just entering Soroe Sund, between the islands of Soroe and Lopper. Here we observed several insects flying over us, amongst which were a *Tipula* and a large dragon-fly. The sail up Soroe Sund is extremely beautiful. On one side, the rocky and barren shores, Soroe, with the little town of Hasvig; and on the other, the lofty mountains of the island of Seyland, crowned by a magnificent glacier, which in some places descended the ravines almost to the water's edge. To such of us as had never been in Switzerland, the sight of the clear green ice projecting through the snow, was novel and interesting. Being becalmed, we resolved to land on the island of Soroe, and accordingly went ashore a little north of Hasvig. As we approached the shore we saw several eider ducks, and some others, but not sufficiently near to discern the species. Landing on the rocks, covered with sea weed, we immediately came upon a rich carpet of *Empetrum nigrum*, *Azalea procumbens*, *Cornus suecica*, and *Trientalis Europæa*. Another boggy spot, in a low situation, was distinguished by more luxuriant vegetation, consisting of *Geranium sylvaticum*, *Polemonum cæruleum*, *Epilobium angustifolium*, *Sonchus alpinus*, *Lotus corniculatus*, &c. &c. Here also, our first personal introduction to the insects of

Norway took place, by our falling in with clouds of mosquitoes, which were but too ardent in welcoming us to their shores. A shady ravine afforded a few *Salices*, *Polypodium dryopteris*, *Aspidium dilatatum*, and last, but not least, the lovely *Viola biflora*. *Pinguicula vulgaris* and *Rubus chamaemorus* were abundant, as were also *Bartsia alpina* and *Pedicularis lapponica*, while the highest rocks were adorned with the neat dense tufts and white flowers of *Diapensia lapponica*. On the banks of a small lake I was delighted to find a large patch of the beautiful *Menziesia corymbosa*, which I greeted with pleasure, not merely from its rarity as a British plant, but also as recalling to my remembrance in a foreign land, my venerable friend whose name it bears. Among other insects we noticed *Carabus glabratus*, *Mallophaga* 1 species, *Lesteva* 2 species, *Deporaus Betulae*, *Telephorus* 1 species, *Allantus* 2, *Ichneumon* *genuini* 13, *Ichneumon* *adsciti* 5, *Cinetus* 1, *Pteromalus* 1, *Culex* abundant, *Chironomus* 3, *Ceratopogon* 1, *Molophilus brevipennis*, *Erioptera* 1, *Limnobia* 2, *Tipula* 1, *Leia* 1, *Sciophila* 1, *Mycetophila* 1, *Molobrus* 1, *Rhagio scolopaceus*, *Rhamphomyia* 3, *Dolichopus* 1, *Sphaerophoria* 1, *Scæva* 1, *Anthomyia* 12, *Cordylura* 1, *Psila* 1, *Scatophaga* 1, *Caropa* 1, *Libellula* 1, *Nemoura* 1, *Zygana Loti* very abundant and many *Acari*, under stones on the sea shore. On the rocks and sea weeds I observed abundance of a small *Littorina*, and dead shells of *Cyprina Islandica* and *Pholas crispatus*, and the rocks were strewed with shells of *Echinus esculentus*, broken by the gulls and hooded crows. I found many of these also on the mountains, at a considerable elevation, and consider it not impossible that abundance of sea shells, carried to elevated spots by this means, may in some cases have led to the idea of the level of the sea having sunk, or the land risen. I do not, however, by any means wish to invalidate the truth of this theory, which appears to have been established beyond dispute.

16th. The wind having died away, it was late in the afternoon before we reached Hammerfest. This most northern town in Europe is situated in a beautiful bay, completely landlocked, and has a very pretty appearance from the water. A closer inspection rather disappointed us, from the irregularity of the buildings, although, taken individually, some of the houses are large and handsome. The church is a very primi-

tive structure, built of wood, as is the whole town. It is apparently old, but contains relics of an older edifice, in the curiously carved pulpit, &c.

In the church-yard, which is just outside the town, we found *Cornus suecica*, *Trientalis Europæa*, and *Polygonum viviparum* growing on the graves. Some rocks a little further along the shore afforded us *Saxifraga rivularis*, *Cerastium alpinum*, and other alpine plants.

We supped at the house of one of the principal merchants, where we were regaled with the sour milk of the country, and rein-deer venison killed the previous winter, which was perfectly fresh and good. The remarkably dry air of this country greatly retards the putrefaction of animal matter. The greater part of the fish which is cured for exportation is merely dried by exposure to the air, without any salt.

17th.—After attending divine service in the church, we took the track towards the Tyvefield or Thief Mountain,—the highest point of elevation in the immediate neighbourhood. It is only about 1,200 feet high, but still affords a magnificent view over the islands and fiords. From its summit the North Cape on the island of Mageroe is distinctly seen at the distance, in a straight line, of about thirty-six miles. A small ravine at the foot of the mountain was filled with stunted birches, the only trees, if I may so call them, which occur so far north. Beneath them the ground was quite yellow with the blossoms of the lovely *Viola biflora*. Here I also met with abundance of *Menziesia cærulea*. The mosquitoes were too abundant to render botanizing here at all agreeable. With the exception of this troublesome little insect, we have been much struck with the very great dearth of animal life in these northern regions. Hardly a bird breaks the desolate repose of the scene, except now and then a solitary eagle, (*F. albicilla*?) or a few golden plovers or stonechats.

Even insects are almost entirely wanting. A few small Lepidoptera (principally moths,) and some minute Diptera, comprise all we have seen. Amongst other plants, *Salix lanata*, so rare with us, was not uncommon. On our return to Hammerfest we were much amused by the little patches of ground called gardens. The principal houses each possessed one, a few yards square, containing potatoes, which attain the size of walnuts, turnips about the size of our turnip-radishes,

and a few other annual esculents. In the whole neighbourhood there is not the slightest attempt at agriculture; indeed we only saw one enclosed pasture. This, however, being backed by high rocks, and open to the south, displayed as luxuriant a crop of grass and buttercups as ever adorned an English meadow.

18th.—Landed on the Peninsula of Fugleness, on the opposite side of the Bay of Hammerfest. It is low and covered with turf, through which the schistose rocks of the district appear. Here, owing to its exposed situation, there are no attempts at gardening. In an old enclosure, formerly a burying ground, I sowed, round the only tomb now remaining, *Malcomia maritima*, *Lupinus Nootkatensis*, *Eschscholtzia crocea*, and *Californica*, with the stately *Heracleum giganteum*. Here I also gathered *Botrychium lunaria*, *Parnassia palustris*, *Cochlearia Greenlandica*? and *Carex incurva*.

In proceeding round the bay towards Hammerfest, the coast becomes more rocky, and about midway there are some tolerably high cliffs, on which we gathered *Potentilla alpestris*, *Erigeron uniflorus*, *Rhodiola rosea*, *Saxifraga oppositifolia*, and *nivalis*, with *Cystea fragilis*. A *Libellula* and few specimens of *Hipparchia Blandina* were captured, and under stones we found *Miscodera arctica*. In the evening, at the house of the Tolder (chief of the customs,) who has a collection of some of the natural productions of the country, I saw beautiful specimens of the fine *Alecyonium arboreum* and *Gorgonia lepadifera*, both of which are figured in De Capell Brook's Travels.

The wind blowing violently from the north-east, with every prospect of continuance, we reluctantly abandoned an expedition to the North Cape, in company with some French gentlemen, who are here for that purpose, but who, having more time to spare, are determined to remain till the weather permits their making the excursion.

19th.—Rambled up a large valley among the mountains at the back of Fugleness, with the intention of ascending the highest point. Our way lay through a most desolate track, with a succession of small lakes, and abounding in *Salices*. From the remains of large birch trees which present themselves at every step, it is evident that this valley was at no distant period extensively wooded. It is difficult to say what has caused the mortality, but in some instances it is evidently the result of

avalanches having fallen from above, and lain so long as to destroy the vitality of the trees.

The ascent of the mountain was rather difficult, owing to the loose fragments of rock which cover the upper part of it. Amongst them grew abundance of *Cryptogramma crispa*, and on a small bare spot I was delighted to espy a solitary patch of that most lovely little plant, *Andromeda hypnoides*. This, like some other plants I have noticed, was very local, as the most diligent search failed in discovering more of it.

The rocks on the summit were completely carpeted with *Diapensia lapponica*, and *Dryas octopetala*. The wind was so high and the cold so great, that I was glad to descend towards Fugleness. On my way down I gathered a large stock of *Bartsia alpina*, *Pedicularis lapponica*, with other good plants.

20th.—The rain kept us on board all the day, and the cold was such that we were glad to have a fire in the cabin. This, however, afforded me a good opportunity for arranging the collection of plants I had made.

21st.—Weather still wet and cold. In the afternoon it cleared up and we went to Hammerfest, where we visited every respectable house in the town, for the purpose of inviting the inhabitants to a ball, which we resolved to give. After making our calls, we rambled among some rocks above the town, and gathered some *Salices*, &c. One of our party, who had been shooting sea-fowl on the Great Hielm, a rock somewhat resembling the Bass, about five miles out in the bay, returned with some fine specimens of *Lithospermum maritimum*.

22d.—The fore part of this day was devoted to another ascent of the Tyvefield, from which, the weather being clear, we had a splendid view. The North Cape in one direction, and the Glacier opposite Hasvig in the other, were distinctly visible. The plants gathered were much the same as on a former occasion, with the exception of a *Luzula*, apparently *L. hyperborea*, R. Br. Among the few insects seen was a species of *Melitæa*, at an elevation of about 1,000 feet. On our return to the vessel we had barely time to dine and dress for the ball, as in this country such entertainments commence at an early hour. At half-past six the company began to arrive, but the gentlemen only were shown into the refreshment room, where we received them. The table was loaded

with "schnaps," in the form of ham, salt beef, dried salmon, &c. &c., with wines, spirits, and liqueurs. After every one had taken something to eat and drink, and most of our visitors had smoked a pipe, we adjourned to the ladies, whom we found seated round the ball-room, awaiting our arrival.

Dancing immediately commenced, and was kept up with great spirit for twelve hours. Waltzes and country dances were the favourites. A quadrille was indeed attempted, out of compliment to us, but it turned out a decided failure. Our orchestra, consisting of three violins, was not the best in the world, but it served the purpose. Refreshments were from time to time handed round to the ladies, while the gentlemen paid not unfrequent visits to the refreshment room, for another whiff at their pipes, or to discuss some of the good things, amongst which, excellent but very potent rum punch was not the least conspicuous.

The ladies, although inhabiting so northern and remote a region, certainly would not have discredited the ball-rooms of more favoured countries. Some of them were distinguished for personal beauty, and I could not help agreeing with a remark^b which my friend Forbes made, in reference to a more southern point of Norway, that "the ladies of Norway are decidedly well worthy the attention of the naturalist."

What appeared most strange to us was, that the whole affair took place by broad daylight. At six o'clock our visitors began to depart, but not before we had received the thanks of the party, for one of the most distinguished assemblies that had ever been given in Hammerfest. The number present was between sixty and seventy, and the whole expense, including refreshments, hire of room, musicians, &c. &c. did not exceed 10%.

23d.—After a few hours' sleep we went on shore to make our farewell visits to our partners of the preceding evening. Having performed this duty, and got on board various furs, &c., which we had purchased, we weighed anchor in the evening, and with a light breeze left this hospitable place. Some of our fair friends, stationed on an elevated spot near the church, waved their adieus as we passed down the bay, and we

^b Mag. Nat. Hist. vol. viii. p. 250.

continued to salute them with all the fire-arms we could muster, as long as we were in sight. The short nights we had lately had made us inclined to turn in at an early hour, especially as the scenery through which we were passing was not particularly fine.

24th.—During the night we entered the Great Alten Fiord, but the wind dying away we made but little progress. The scenery began decidedly to improve. In some places the Fiord resembled a large lake, in others it was contracted to a narrow passage, between high and almost perpendicular rocks. On some of these precipices we observed a few pines, and the farther we advanced the larger and more numerous they became. It was not, however, till the evening when we entered Kaafiord (pronounced Køfiord), that they constituted an important feature of the scene. Here we saw mountains covered with them to a considerable elevation. The wind having quite died away, we had much difficulty in working up the narrow fiord, but at length anchored a little below the establishment of the Alten Mining Company, to which our vessel was bound.

The narrow Fiord was bounded on one side by mountains upwards of 1000 feet in height, which rose almost perpendicularly from the water, while on the opposite side, between the high mountains and the shore, were hills covered with pine and birch, below which were scattered the smelting-houses, cottages and other buildings belonging to the establishment. We were most hospitably received at the house by Messrs. Woodfall and Crowe, the resident Directors, the latter of whom had been our fellow-passenger from England. His knowledge of the language, and extensive acquaintance, proved of great service to us at Hammerfest and elsewhere. From these gentlemen, and indeed every one connected with the mines, we received every possible kindness and assistance.

Before retiring to rest I ran up into the pine woods above the house, and was repaid by seeing a bank entirely covered with the delicate flowers of *Linnaea borealis*, which quite perfumed the air. As long as I remained in Finmark, I almost always wore a bouquet of *Linnaea* and *Menziesia* in my cap.

25th and 26th.—We visited the mines, which are numerous, and are worked by means of levels or adits in the Greenstone mountains. The copper ore is amorphous pyrites, accompanied sometimes by specular iron. Beautiful crystals of

calcareous spar also occur, as well as a coarse Asbestos containing Epidote.

The ascent to the mines afforded us many good plants, comprising many we had previously found. Among the new ones, were *Pyrola rotundifolia* and *secunda*, *Saxifraga cernua*, *Veronica saxatilis*, *Gentiana nivalis*, &c. &c. *Linnæa* and *Menziesia* completely cover the ground in many places; indeed the latter supplies here the place of the *Ericæ*, of which we have only met with one (*Calluna vulgaris*), and that very sparingly.

27th.—To-day we crossed the upper part of the Fiord, and rambled up the banks of a river which comes down from a lake a few miles up the valley. A short distance from its mouth is a tolerably large and very picturesque cataract, close to which I gathered, for the first time in my life, that beautiful plant *Astragalus alpinus*. *Hieracium alpinum*? was also plentiful, and the more shaded and mossy parts of the wood abounded with *Pyrola secunda* and *Pedicularis Lapponica*, with here and there a specimen of *Goodyera repens*. Almost every flowering plant was covered with *Geometra casiata*, which rose in clouds at every step we took. The mosquitoes, as usual, were very numerous and troublesome. In dryer and more open places among dead leaves, &c., a species of *Blatta* (*B. Lapponica*?) was abundant. It runs actively, and flies from bush to bush.

28th, 29th and 30th.—We rambled about the neighbourhood in different directions, and obtained some plants and insects, but nothing very rare. On the banks of a little stream above the mines, which abounds in willows, is a large rock of a porous soft limestone, containing abundance of green mica. From the leaves of the willows I got a few specimens of a fine scarlet and black *Chrysomela*? Another small greenish species was plentiful, accompanied by its larvæ, which have several white lateral tentacula drawn in when touched. The highest rocks were covered with *Diapensia Lapponica* and *Arbutus alpina*, the latter with ripe fruit.

31st, Sunday.—Mr. Crowe read prayers to the English connected with the mines, there being no church of any kind nearer than Talvig, a distance of twelve or fifteen miles. While we were thus engaged a party of ladies arrived from Tromsø, consisting of the Amptmaninde (the Lady of the Ampman, of Finmark), and two relatives, one of whom,

Jomfrue Figenschow, was a very pretty girl. I may perhaps here notice the different appellations of ladies in this country. The ladies of official persons have the title *Frue* prefixed to their name, whilst other ladies are simply called *Madame*. Thus the lady of our kind host was, from Mr. Crowe's consular station, addressed as Frue Crowe, whilst her sister is merely called Madame Aasberg. These ladies some years since visited England, and both speak English remarkably well. Generally, however, the Finmark ladies speak no other language than their own, which we found rather a drawback on the social intercourse which we enjoyed; but we managed to pick up a few words here and there: by means of these and signs we contrived to get on pretty well. In the evening we had a dance, which, after six o'clock on Sundays, is considered perfectly orthodox.

August 1st.—The French gentlemen whom we had met at Hammerfest arrived from thence, having succeeded, after our departure, in reaching the North Cape. The weather, however, was very hazy and unfavourable. We obtained from them some specimens of the quartz and other rocks of the Cape. In the evening some of our party accompanied them over the Fiord to Bossekop.

2d.—Rowed over to Bossekop with the Amptmaninde and the other ladies, and literally filled the hospitable mansion of Madame Klerck. Our French friends were still there, and the party being further increased by some neighbouring ladies, who played and sung delightfully, we spent a most agreeable evening.

3d.—After breakfast we set out to pay a visit to the Reipass mines, which are situated some miles on the other side of the Alten river. The valley of this river, I should imagine, can be equalled by few in Finmark. It is finely wooded and adorned with rich meadows, and several pretty villages. The Alten river is a noble stream, which appears at times to pour down an immense volume of water, as is evident from the extensive beds of rocks of various kinds, which in some places cover its banks.

Between Bossekop and the river, the meadows were adorned with many plants; the most interesting among which was *Gentiana nivalis*, whose brilliant azure stars were very conspicuous among the short grass. Just as we descended the last slope

toward the river, we were delighted to gather the beautiful deep rose-coloured blossoms of *Rubus arcticus*, which we had not previously met with. Our way now lay for about half a mile across a perfect desert, being an ancient bed of the river, consisting of rolled masses of rock of all sizes and formations. Generally speaking it was quite destitute of vegetation, but its scanty Flora exhibited a strange mixture of plants. *Saxifraga oppositifolia* and *aizoides*, *Lychnis alpina*, and *apetala*, were growing with *Epilobium angustifolium* *Tamarix Germanica* and *Astragalus alpinus*; whilst here and there even the delicate *Trientalis Europæa* expanded its modest blossoms.

Immediately on crossing the river a very great change was apparent. The woods extending to the water's edge were quite carpeted with *Rubus arcticus*, intermixed with the blue spikes of a species of *Veronica*. The more mossy places afforded a tolerable harvest of *Goodyera repens*, and a boggy spot in the wood the regal *Pedicularis Sceptum-Caroli*. After crossing a small mountain-stream the track began to ascend, and in some places was so steep as to make no wonder how it was possible to bring down the sledges with ore from the mines. We stopped about half way to rest at an unfinished house, where we unpacked some of our provisions, and made a hearty meal after our fatigue. On the banks of a small mountain lake before the house, I gathered for the first time *Pinguicula alpina*, *Pyrola uniflora*, and *Eriophorum alpinum*. After a long and tedious ascent we reached the mines, which are situated within a few yards of the summit of a mountain. As they are worked by shafts we did not descend them, but mineralogized among the heaps of ore above ground. These mines are very much richer than those of Kaafjord. The ore is that beautiful variety of pyrites commonly called *Peacock copper ore*, and is accompanied by a good deal of red Arseniate of Cobalt. I also obtained some good specimens of blue carbonate of copper and Bitterspar. From the rocks immediately above the mines, the view over the head of the Alten Fiord and mouth of the Alten river was very fine. On the face of a precipice, I gathered abundance of *Woodsia hyperborea*, which recalled to my mind another far distant friend. A few specimens of *Phaca frigida* also occurred, but almost out of flower. A part of our plan was to take a barometrical observation of the height of these mines, but owing to an accident to the

instrument during the ascent we were prevented from doing so. It was fortunate for us that our homeward way lay downhill, for we were so heavily laden with minerals, &c. as hardly to be able to walk. We reached Bossekop very much fatigued, and intending to go at once to bed, but we found our kind hostess absent, and a message left for us to follow her to spend the evening at the Fogedtegaard. Luckily this was at no great distance; so, after renovating our dress as far as possible, we bent our steps there. We were most hospitably received; and in listening to the delightful songs of Frue Gruntwyd and her sister Jomfrue Stabell, we soon forgot the fatigues of the day. Among other airs I was delighted to hear my great favourite "*Una voce poco fa*," which I think even pleased me more (coming thus unexpectedly in such a remote spot) than when I had last heard it warbled by Grisi within the charmed circle of the King's Theatre.

4th.—A picnic party having been agreed upon, it was determined to visit the Sandfall, a very beautiful and remarkable spot, near the mouth of the Alten river. This is a singular flat-topped ridge, running for several miles parallel to the Fiord, and only a short distance from it. The side next the water is very steep, but covered with trees, while the inland declivity is less abrupt. The breadth cannot be above one hundred yards, although in some places it varies considerably. At the extremity, the Alten river, making an abrupt curve, washes its base; in fact, evidently has cut off a portion, and by this section has disclosed its structure. This singular ridge is composed of sand and rolled pebbles of various sizes, evidently deposited gradually, as the different strata plainly show. Its height at the truncated end, which is nearly perpendicular, must be at least one hundred feet. The view from the extremity is most splendid. The head of the Fiord, backed by richly wooded cliffs and high mountains, the magnificent valley of the Alten river stretching away in the distance, the river winding its way through beautiful meadows and dense forests, with the pretty villages of Elvebachen and Upper Alten on its banks, altogether combined to form one of the loveliest prospects I ever beheld. However, we could not, even amid all these beauties, forget our provision baskets, and were soon seated hard at work on all the good things Madame Klerck had liberally provided. These were accompanied by liba-

tions of punch, champagne, &c. &c., so that on the whole we did not fare amiss. Some national songs from the ladies formed a very agreeable dessert to our repast. When this was over, such of us as were naturalists left our other companions to escort the ladies, and rambled away in search of objects of natural history. The locality afforded few plants, excepting very common ones. The *Linnaea*, indeed, covered the ground under the fir-trees, but then that grows *every where* in Norway. A thicket of red currant bushes near the water's edge was full of *Actaea spicata*, a rare British plant, which I had never before seen growing wild. In some stumps of fir-trees were abundance of *Formica herculeana*, and two other species of ants, all living in juxtaposition.

Pytho depressus occurred in considerable numbers under the bark of felled fir-trees, with its larva and pupa. It makes circular flat holes, whose diameters exceed by half their depth. These are surrounded by a close mass of grains of wood. A species of *Rhagium* was also abundant in all stages. It forms circular holes rather deeper and smaller than those of *Pytho*, and surrounded by twisted fibres of wood.

On the river were a few ducks, but we could not get within shot of them. Our anglers were equally unsuccessful, though the river is said to abound with fine salmon. On the level between the Sandfall and the shore of the Fiord, is a large house, called the Amptnangaard, formerly the residence of the Amptmans of Finmark, and I believe the birth-place of our fair companion the Amptmaninde. It has stood unoccupied for many years, which, in so lovely a situation, seems much to be regretted. The high ridge of the Sandfall, which rises directly behind it, completely screens it from the north, while from the front a large extent of the most beautifully level turf stretches to the water's edge, and being interspersed with clumps of trees gives it quite the appearance of an English park. The house, with some of the surrounding land, might be purchased for 300 or 400*l.*, and would make a delightful occasional summer residence for a member of the Yacht Club. We returned to Bossekop along the sea side of the Sandfall, enjoying most delightful views over the Fiord. The great glaciers of Seyland were very conspicuous in the distance. At supper we had abundance of the berries of *Rubus chamaemorus*, called by the Norwegians "*Moltebær*." These are

either boiled down with sugar, or eaten fresh, with sugar and cream. In either way they are very palatable, and considered very wholesome. *Rubus arcticus*, although abundant in some spots, does not produce fruit so far north. The only other fruit which ripens well, and is of frequent occurrence, is the common red-currant, which is very plentiful in the moister woods. The berries are gathered for preserving, but the plant is but little cultivated.

The whortleberry, *Vaccinium myrtillus* ("Blæbar" of the natives), is also common, and sometimes eaten. The plant is usually less luxuriant than with us, but the berries are, if any thing, larger. Another plant of which the fruit is eaten is the "*Kraakebar*" (*Empetrum nigrum*), but it is only made use of by the Laplanders. We some of us became fond of the berries, which are much larger, and more juicy, than on our English mountains. Some of the mountain tops afforded us plenty of the fruit of *Arbutus alpina*, which is eatable, but not very palatable. The berries are mealy and insipid, with a very slight flavour of black currants. They form a very favourite food for the ptarmigan. The raspberry occasionally occurs in moist woods, but rarely produces fruit, neither did I observe it in the gardens.

5th.—Having heard that the skeleton of a human being was lying among some rocks in the neighbourhood of Bossekop, one of our party visited the spot, and possessed himself of the skull. The orbit of the eye and some other parts were overgrown with moss, which, on examination, proved to be *Splachnum mnioides*. It is singular to observe how almost invariably this genus delights to grow upon animal substances. The skeleton was that of a Russian, who died many years since on board a vessel at Bossekop. His companions not wishing to take him so far as Talvig, or objecting to bury him in a Lutheran church-yard, placed the body in a cleft of rock. In the evening we returned to Kaafjord.

6th.—Rambled up the valley towards Matthieson's Lake; but the extreme heat and the mosquitoes conspired to prevent us reaching our destination. The only birds we saw were abundance of young fieldfares, which had just left the nest, a few specimens of the cole titmouse, and some ptarmigan, which were probably *Lagopus Saliceti*. The natives distinguish two species or varieties,—the one affecting the woods, and the other

the mountain tops, by the respective names of "*Dahl Rypet*," and "*Fjeld-Rypet*." The nests of the fieldfare were abundant in low bushes. In one of them I found the eggs, which very nearly resemble those of the blackbird. In a marshy part of the wood we gathered fine specimens of *Pyrola uniflora*.

7th.—We started early on our way to Iby, on the river of that name (a tributary of the Alten), where we were to meet our friends from Bossekop, at a picnic. Rowing a few miles down Kaaiford, we landed at the little village of Quainvig, and proceeded inland. Our way lay for some distance by the side of a chain of small lakes, whose rushy banks seemed very favourable for waterfowl. Not a bird, however, did we see; indeed, I believe the only living creatures I observed, except musquitoes, were a solitary eagle, and one specimen of *Carabus glabratus*. Having crossed a rocky ridge, we began to descend, through a fine dense forest,* towards the Iby river, the rush of whose rapids was distinctly heard.

No very good plants occurred, excepting that on a small patch of dung in the pathway I found no less than three species of *Splachnum* growing together, including the fine *S. luteum*. At length we arrived at the place of destination, a lone farm-house, belonging to Madame Klerck.

Here we found the ladies waiting for us, and a most glorious collation spread out, to which, after our long and fatiguing walk, we did full justice. The woods close to the house were glowing with the rose-coloured flowers of *Rubus arcticus*, which also was abundant in the grass of the meadows.

Some parts of the wood were also filled with *Struthiopteris Germanica*, which made a magnificent appearance, with its fine circles of fronds, of a most delicate and lively green. The fructification was yet hardly apparent; but some of the old spikes of former years remained on the plants. Attracted by the sound of the river, we strolled down to it, and had to cross a similar stony waste to that I have before mentioned on the Alten. It had a yet more singular appearance, from the quantity of large bushes of *Tamarix Germanica*, which were scattered over it. These were now covered with spikes of beautiful silky white seeds, and here and there a few flowers.

After coffee, the ladies and their escort returned to Bossekop, whilst the remainder of us resolved to stay, and devote the next day to a further expedition up the valley.

Accordingly, after a very good supper on fine salmon, just out of the river, we made beds of skins on the floor, and contrived, after the fatigues of the day, to get a pretty good night's rest, in spite of the mosquitoes, which, from the proximity of the river, were very numerous.

Stl. — We managed to make a pretty good breakfast on the remains of our provisions, with the addition of some coffee, and then started off into the forest. Our guide was a wood-cutter, who carried a sort of wooden horn, called a Lure, which he blew from time to time, to call in the stragglers of the party. These instruments are much used in the south of Norway and Sweden, for the purpose of calling cattle from the woods. In Finmark they are, I believe, little known. The one in question had been brought by our guide from the vicinity of Röras, of which place he was a native. When heard at a little distance, the note is not unmusical, especially when repeated by the mountain echoes. One of the party shot a very pretty species of owl,* somewhat resembling a miniature *Strix nyctea*; several specimens were afterwards met with. It appears to be almost diurnal, like our *S. Brachyotus*.

I was not a little startled, whilst gathering a plant near the river side, by the sudden rising, within a yard of me, of a fine cock of the woods (*Tetrao Urogallus*). Shortly afterwards I heard several shots, and on rejoining my companions I found they had succeeded in bringing down a female, and several half-grown young ones. In the course of the day several other young males were shot, but we were unable to procure one in adult plumage. The only other living creatures we saw in the woods were a few of the common squirrel. A dead lemming having been picked up, led to a conversation with our guide on the subject of their occasional appearance in immense numbers; he described to us a visitation of this kind, which he had witnessed some years ago in the south. I thought this a good time to make some inquiry as to the truth of the oft-repeated story that the reindeer eat these animals; and accordingly my friend Mr. Woodfall was kind enough to question him very closely on the subject. He stated that he had never seen the reindeer eat the lemming, as there are but

* I have since learned from Mr. Gould, that this bird is *Strix funerea*, Gmelin (*T. Hudsonia*, Wilson).

few deer in the south, but that it was very common for sheep to do so, and the fact had come under his own observation : those sheep, however, who did so, very soon became emaciated, or, to use his own words, "dried up." As soon, therefore, as a sheep was seen to commit this act, it was killed before it became useless. It appears to me far more probable that the disease was the cause, and not the result, of this strange perversion of nature. Equally singular cases of depraved appetite occur both among animals and the human species, and generally attended with great emaciation ; I was certainly much pleased to find the fact established, and at the same time to find a reasonable cause for its occurrence. In the course of our ramble our guide showed us a little hollow, in which during the previous winter he had discovered and killed a large bear. They are, however, now by no means of frequent occurrence, especially in summer time ; indeed, both bears and wolves seem rapidly decreasing in number.

The ground we traversed afforded us but few new plants. One very interesting species, *Kanigia Islandica*, occurred in abundance in the half dry bed of a small rivulet, and near it I found a few plants of *Corallorhiza innata*. We reached the hut at Iby pretty well fatigued, and after resting ourselves, and finishing the remaining fragments of our provisions, we set out on our return to Bossekop. It was a lovely evening, and we had a most delightful walk along the banks of the Alten river.

9th.—We rambled among the mountains at the back of the Fagedtgaard, having as our guide the Postmaster Norager, who, although not a botanist, is well acquainted with the native plants, and possesses a small herbarium. Unluckily this was formed many years ago, and he has forgotten the places where he gathered some of the rarest plants. This was especially the case with the rare and beautiful *Rhododendron Lapponicum*. We did not find many good plants, except that, near the summit of one mountain, I observed a few plants out of flower, of the very rare *Andromeda tetragona*.

A part of our descent towards the valley of the Alten was through a very remarkable reft or crevice in the mountain, in some places not three yards wide, and with lofty perpendicular rocks on each side. In a part of the forest adjoining the desert bed of the river before mentioned, Mr. Norager pointed out to

as the only station with which he was acquainted, for a species of rose; it is a pretty small shrub, with deep purple-crimson flowers and red-barked stems. I had previously noticed it cultivated in Madame Klerck's garden, and learned that the roots had been procured from the forest. It does not exactly agree with *Rosa cinnamomea* of our gardens, but may perhaps be *R. majalis*, if that be not, as Sir J. C. Smith suspects, merely a variety of *cinnamomea*.

Gentiana nivalis was abundant on the grassy hills, accompanied by a less showy, but much rarer species, *G. involucrata*. *Ranunculus flammula* var. *reptans* also occurred commonly on the half-dried mud of little pools in low ground.

Again accompanied by Mr. Norager, we made a second excursion beyond the Alten river, which we crossed very near its mouth. A very extensive sandy flat was in some places literally covered with *Lathyrus pisiformis*, which the peasantry were busy cutting for hay; the two gentians were abundant, and I also met with another species, *G. serrata*. Almost close to the Fiord was abundance of *Elymus arenarius* the seeds of which, as Mr. Norager informed us, are sometimes gathered and eaten in time of scarcity.

Astragalus alpinus was in many parts mixed with the *Lathyrus*.

In some marshes adjoining the river I found many plants of a *Primula*, out of flower, which appeared to be the same as the one I had found on the island of Soroe. It might, however, be *P. stricta*, Flor. Dan., which much resembles it in the leaves. A heathy piece of ground was quite a sheet of white from the immense quantity of *Trientalis Europæa*, with which it was covered, and I found that this flower has a very delicate honeysuckle smell, which is perhaps hardly perceptible in a single flower, but was now very apparent.

We proceeded up the valley of a small river which falls into the Alten, and soon came to a very romantic part, where it rushes for a considerable distance over a succession of rocky ledges. A saw-mill and house were picturesquely situated on a point of rock just over the principal fall. The proprietor, Mr. Jakobsen, received us very kindly, and his good lady spread for us a very inviting repast, to which we were not backward in doing justice. The river above the falls forms a strange contrast to its appearance below them. It flows slowly along

between smooth turfey banks, and more resembles an artificial canal than a mountain stream.

On its banks I gathered a species of *Lathyrus*, of which I unfortunately lost the specimens. It somewhat resembled our *L. palustris*, but the flowers were of a deeper colour, and the leaves were much longer and narrower than in the specimens of *L. palustris* I have gathered in Cambridgeshire. In the course of the day, I obtained from Mr. Norager the native names for many of the commoner plants, especially those with eatable fruits, or which are used in medicine.

Some of these were interesting, as very closely resembling those applied to the same plants in Scotland, and some parts of the north of England. I only regret that the accidental loss of the note-book in which these memoranda were made, prevents me from giving some of them.

The evening was devoted to skinning birds, &c.; the proceeds of our trip to Iby. I was also occupied till a late hour in changing the papers of my plants, and putting away the acquisitions of the day.

11th.—During the morning we employed ourselves in arranging our spoils, and after dinner went with our kind hostess to visit a poor woman, who required the medical attention of one of the party. Our course lay towards the river, but in rather a new direction, and we had some very fine views over the valley. On our return we determined to take a vapour-bath, and therefore walked over to one about a mile and a half distant. I think I never saw a lovelier situation than that occupied by this cottage. It stood at the brink of a rocky ridge, which descends almost perpendicularly towards the valley, so that it commands an uninterrupted view in that direction. A little patch of corn (bear or bigg) close to it, contained abundance of *Asperugo procumbens*; a plant which, although British, I had not previously met with. The bath was at a little distance from the house, and consisted of a small wooden building, with a door and very small window. It was furnished with a sort of furnace, built of large stones, on which is made a fire of wood; the smoke going out of the door as in an Irish cabin. About half-way up the building is a broad sort of shelf, to which access is gained by a ladder. When the stones are sufficiently heated, water is thrown on them, which makes of course a very dense steam. As soon as all is ready you enter, ascend the ladder,

and lie down upon the shelf, which is covered with birch boughs. The woman who attends the bath then hands you up a large rod, dipped in hot water, with which you are to whip yourself well all over; she, in the meantime, throwing water on the stones to increase the steam. To do the thing properly, you ought to lie there till a most copious burst of perspiration takes place; but after I had endured two volleys of steam, I could bear it no longer, and roaring out to the old lady, "Ikke mere" (no more), I descended the ladder as fast as possible. On coming down you step into a large tub of hot water, and are very carefully washed with soap from head to foot. You then wrap yourself in a sheet, and go to the open air, or into the house, where you must sit undressed till the perspiration subsides. We all agreed that the affair was rather disagreeable than otherwise; but this was in a great measure owing to the steam being combined with the suffocating wood smoke. A very little alteration in building the furnace with a chimney would obviate the inconvenience.

Although the heat in the bath was very great, and its situation very open and exposed, we felt no inconvenience on coming into the open air. I much regret that I had not a thermometer with me, in order to have ascertained the temperature of the interior of the bath. I have described the operation at some length, as what we saw and heard of the baths, differed much from the account given by Acerbi.

12th.—Rambled about Bossekop, sketching, &c., and in the evening returned to Kaafjord.

13th.—We were much amused at witnessing the public flogging of a man, who had been detected in purloining something from the Company's store. It took place opposite the store, just after the miners had been paid their weekly wages, consequently there was a numerous assemblage. The culprit did not even take off his jacket, and he received a few blows across the back with a stout rope. It was altogether a very ridiculous affair, and, as a gentleman present remarked, any English sailor would have taken the same punishment for a glass of grog.

14th.—Early in the morning a large party started for Talvig, where the parish church is situated, a distance by water of about twelve miles.

The principal object of our visit was to be present at the

christening of the child of one of the English attached to the mines, as well as for the sake of seeing the place. There being but little wind, we did not get on very fast, but eventually reached Talvig long before service commenced.

We landed on a promontory called Jans Ness, where we discussed some provisions we had brought. On the rocks I observed a few specimens of *Purpura lapillus*, and some willows near the shore were infested with a species of *Chrysomela*, of a dark bronze green colour, differing from any I had previously found.

After calling on the principal merchant, Mr. Nörberg, we proceeded to the church, which is a plain wooden building, much larger than, but not nearly so much ornamented as that at Hammerfest.

It can boast, however, of two large chandeliers, apparently of silver. The order of the service is much the same as that of the English Church. The altar being adorned with a large crucifix, pictures, candles, &c., looks rather unlike a Protestant place of worship; and the dress of the clergyman is very unlike ours, consisting of a plain black gown, with a wide stiff double muslin frill round the neck.

He read the lesson for the day (the parable of the Pharisee and Publican) from the pulpit, and preached from it. There were two weddings, and numerous christenings, the services for which differ little from ours. After the service was over, we dined with Mr. Nörberg, and were much pleased to meet the clergyman, who is an extremely agreeable man. He speaks German and French well, and reads, though he does not speak English. We had a pleasant though rather tedious row back to Kaafjord, which we did not reach till late.

15th, 16th, 17th.—Botanizing, sketching, paying farewell visits, &c. occupied these days, and we found so many *last things* to do, that we were very busily engaged.

18th.—After taking a reluctant leave of our many very kind friends, some of whom accompanied us on board, we dropped with the tide into the outer Fiord, and took a last look at the spot where we had spent so many happy hours, with most cordial wishes to visit it again.

Sept. 1st.—The interval between this date and the last was spent at sea in most dreadfully stormy weather, and distinguished by no incidents worth recording. On this day we put

into the harbour of Balta Sound, in the island of Unst, Shetland, where we were most hospitably received by the proprietor, Mr. Edmondstone. The change from our late discomforts on board, to a civilized house and excellent table, was most agreeable.

24.—The brother of our host, Dr. E. (well known as an ornithologist), kindly took us to the northern point of the island, to see the breeding-place of that fine and now rare bird, the Skua (*Larus Cataractes*). The breeding season being over, they had mostly deserted the place, but we had the good fortune to see several specimens. We visited the mines of chromate of iron, from which Mr. Edmondstone has drawn a valuable prize.

3d.—We again reluctantly left a place, where, as strangers, we had been most hospitably received, and turned our course homewards.



ART. LVIII.—*Proceedings of the Entomological Club.*

SITTING OF THE 19TH JANUARY, 1837.

Mr. BENNETT in the Chair.

The CURATOR read the following list of donations, received since the last meeting:—

Mr. VENESS, of Deptford. A specimen of *Cymotheca Estrus*.

Mr. R. FOSTER, of London. Various East Indian *Arachnoida*.

Mr. RADDON, of Bristol. Various rare British *Noctuides*, also various *Coleoptera*, from Gambia.

Mr. J. W. BOND, of London. Various British insects.

Mr. F. NEWMAN, of Deptford. The 18th number of the *Entomological Magazine*, and the Grammar of Entomology.

Mr. E. CHARLESWORTH, of London. The 1st number of the Magazine of Natural History, new series.

Mr. GEORGE BEVINGTON, of London. A collection of insects, principally *Colcoptera*, from the Cape of Good Hope.

Mr. WILLIAM STAFFORD, of Godalming. Various rare British *Coleoptera*, collected in the neighbourhood of Godalming.

Mr. T. MARSHALL, of Birmingham. Several hundred British insects of all classes; some of them rare.

Mr. R. WEAVER, of the Birmingham Museum. Various rare British insects; among them, beautiful specimens of *Catocala sponsa*, and *C. promissa*.

Mr. W. CHRISTY, jun., of London. Geoffroy's "*Histoire abrégée des Insectes*," 2 vols. 4to. with numerous plates; also "*Monstrositates Coleopterorum*," by Dr. Hermann Martin Asmuss.

MESSRS. JAMES D. DANA and JAMES WHELPLEY, "A Treatise on two American species of the genus *Hydraena*," written by the donors, and published in the American Journal of Science, and Arts, No. 2, Vol. XXX.

Mr. J. B. BEVINGTON, of London. Drury's work on Insects, entitled, "*Illustrations of Natural History*," 3 vols., 4to., containing 150 highly finished copper-plate engravings; also, a fine pair of *Prionus*, from Africa. The species is apparently undescribed.

Mr. BENNETT, of London. The First and Second Parts of the Transactions of the Zoological Society.

Mr. BUSK, of the Dreadnought. Portions of a *Squilla*, apparently undescribed, which had been put together in the fancied similitude of an animal, and brought by a sailor from the island of Timor for the purpose of deceiving the scientific. It had been offered for ten pounds at the British Museum and elsewhere, as an entirely new animal.

Mr. E. DOUBLEDAY, of Epping. About four thousand British Coleoptera, most of them minute. Mr. E. Doubleday also gives the Curator permission to select from his exotic Diptera, Hymenoptera, Orthoptera, Hemiptera, and Neuroptera, all that are desirable to be possessed by the Club. This collection contains many exceedingly rare insects, particularly among the Orthoptera.

Mr. N. T. WETHERELL, of Highgate. A specimen of that fine Cerambycidaeous insect, *Macrodonia cervicornis*; also, a nest of *Vespa Britannica*.

THOMAS INGALL, Esq., of the Camberwell New Road, having been, at the previous meeting, proposed by Mr. Hoyer, and seconded by Mr. J. F. Christy, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club.

SITTING OF THE 16TH FEBRUARY, 1837.

Mr. BEVINGTON in the Chair.

Mr. INGALL exhibited, and presented to the Club, a specimen of *Scarabeus Hercules*.

Mr. BENNETT exhibited a fine and very perfect specimen of the genus *Mallodon*, which was cut out of a piece of rosewood, and was presented to the Club by Mr. W. Smee, of London.

SITTING OF THE 16TH MARCH, 1837.

Mr. BOWERBANK in the Chair.

The CURATOR read the following list of donations:—

Mr. ISAAC GRAY BASS, of Brighton. A British specimen of *Deilephila Galii*; also *Acherontia Atropos*.

Mr. BENJAMIN STANDISH, of London. A variety of exceedingly fine and perfect specimens of British *Noctuides*.

Mr. BRACY CLARK, of London. About 300 species of exotic insects, principally Lepidoptera, from the collection

of the late Mr. Francillon, and many of them collected in Georgia, by Mr. Abbott. By this munificent gift, the cabinet of the Entomological Club receives an addition of about 200 species of Lepidoptera.

Mr. NEWMAN, of Deptford. A copy of Stephens's Systematic Catalogue.

Mr. Edward Doubleday and Mr. Robert Foster, honorary members of the Entomological Club, took leave of the Club, previously to starting on an entomological tour to North America. They purpose landing on New York, then visiting the Falls of Niagara, and passing down the St. Lawrence, to Quebec; after staying a month or two in British America, they will return to New York, and then proceed by way of Philadelphia, Pittsburg, and Cincinnati, towards the extreme west of the Union, residing two or three months in the state of Illinois; thence they will travel down the Mississippi, to New Orleans; then through West and East Florida, to the extreme southern part of the latter, and return by the Atlantic States to New York. The whole journey will occupy from eighteen months to two years. A portion of the specimens collected will be, from time to time, transmitted to London, for the cabinet of the Entomological Club, and duplicates of every species will, as far as possible, be reserved in the possession of the travellers, to be brought to England by themselves. Mr. Doubleday will also transmit, monthly, an account of the progress made, with permission to the Editor of the *Entomological Magazine* to publish the same; a duplicate of this account will also be kept. By this means, the results of the expedition will be, as far as possible, secured to the public.

SITTING OF THE 20TH APRIL, 1837.

Mr. NEWMAN in the Chair.

The CURATOR read the following list of donations:—

Mr. W. E. SHUCKARD, of London. His Essay on the Fossorial Hymenoptera of Great Britain.

Mr. E. QUEKETT, of London. A pair of *Polyommatus Arion*.

Mr. SHOWELL. A series of 35 folio copper-plate engravings, representing various objects in natural history.

M. LAPORTE, Comte de Castelneau, of Paris, having been, by his own desire, proposed by Mr. Walker at a previous meeting, and having been seconded by Mr. Newman, was balloted for, and unanimously elected an honorary corresponding member of the Entomological Club.

SITTING OF THE 10TH MAY, 1837.

This being the anniversary, the members of the Club and their friends dined together at the Bull Inn, Birch Wood Corner; Mr. Hoyer presiding.

SITTING OF THE 15TH JUNE, 1837.

Mr. J. F. CHRISTY in the Chair.

The CURATOR read the following List of Donations:—

Mr. C. C. BABINGTON, of Cambridge. Various rare British insects.

Mr. J. WILSON, of Edinburgh. A fine series of Javanese insects; amongst them *Buprestis Boisduvalii*, and *Mormolyce Phyllodes*.

Mr. J. B. SPENCER, of Blackheath. Various fine Lepidoptera, from the Himalaya mountains.

Mr. S. A. BURLINGHAM, of Worcester. Forty beautifully perfect specimens of *Clostera reclusa*, reared from the larva.

Mr. J. WALTON, of Knaresborough. A copious series of specimens of the British species of the genus *Apion*, and other British *Curculionites*.

A communication has been received from our corresponding members, Messrs. Foster and Doubleday, merely stating their safe arrival at New York; and a second, on the 18th June, from Mr. Doubleday, dated Hudson, 7th May, 1837, from which we have made a few extracts below. The want of space compels us to omit much that would be generally interesting, and to confine ourselves strictly to that portion of the communication which has reference to natural history.

“During the last few days of our passage, we saw great numbers of porpoises. One night, when the sea was very luminous, we had scores of them close to the ship, and, as they shot through the water, they left a line of fire of a pure white

colour; we also saw scores of small cetaceous fish, from ten to sixteen feet in length. On the evening of the 24th of April we had a pilot come on board; since the loss of the *Mexico*, these men are much better behaved, and come out 40 miles from New York: soon after dark we saw the lighthouses at the entrance of the outer bay.

"The persons we met with at our hotel at New York, gave me a good opinion of the Americans; they were very civil, and communicative, but *not inquisitive*. From all to whom we had letters, we have received the greatest kindness. A gentleman, to whom we had an introduction, accompanied us to the custom-house, and all our luggage was passed without examination, or even uncording the boxes. We called on two brothers of the name of Carey, Englishmen, botanists, and very kind persons; they know W. Christy, Newman, and most of our Club; we dined with them on the 30th. We went to the Lyceum of Natural History. They have here a good many minerals, some very fine fossils; not many birds, but some beautifully stuffed by Ward, who resides here; also a library. On the 1st May we went to a meeting at the Lyceum; there was not much to interest: a paper on a new *Arvicola*, and a new *Sorex*: Cooper, who helped Bonaparte, was there, and several other members; all very pleasant people.

"My first journey was on the 27th, to the residence of J. S., directly after breakfast. I crossed the ferry to Jersey city, where the rail-road to New Brunswick commences. The first part of this is unfinished, and too uneven to allow the passage of locomotives: we were therefore drawn by two horses at length; the tram is so near the cut made for the permanent road, that I consider it anything but safe. In some places there is an intervening space of not more than six inches between the tram and the edge of a precipice, cut perpendicularly through the rock, thirty or forty feet deep, and not a morsel of fence to prevent the carriages going over: at Newark we exchanged for locomotives, and soon got to Rahway, about ten miles further. Newark, Elizabethtown, and Rahway are all places of considerable trade in coals, and there are some manufactories in the latter: all these are rather irregularly built; the houses are mostly of wood. The country around is salt marsh, with some good pasture land; in places scattered about are large rocks, almost rising into considerable

hills. *Veratrum nigrum* grows in plenty among the rocks. The climate was more like our March than the end of April. I saw few birds, and fewer insects.

“We are now staying at the house of a friend, about two miles E. of the city of Hudson: it is a most beautiful place, but how to describe it I know not. In looking from the window where I am now writing, the first object that attracts my notice is the gigantic range of the Catskill mountains, distant eighteen miles, with their summits still covered with snow. The Hudson lies below, invisible from the house, and a gently rolling country extends from its shore. The tops of the hills are covered with pine, hickory, oak, and other trees; and here and there is seen the genteel house of some opulent farmer, or the humbler dwelling of him who has to depend on his own industry. Meadows not yet verdant, and arable land, fill up the space to the little river (*Americé creek*), which runs at the bottom of a steep orchard, belonging to the premises. The fruit trees are alive with birds. The day before yesterday I saw the first blue bird; as he glanced between the trees in the sun, nothing could be more beautiful. A pair of these birds are now building in a hole in an old apple-tree. They go and pull off moss, and, returning with it, hang a moment at the mouth of the hole before they enter. Sometimes they hover over the ground, and pick up an insect; but seem mostly to find their food on the trees. They are as tame as possible: their nest is not twenty yards from the window at which I am writing. Just now, a pair of Baltimores were sitting on an apple-tree, close to the corner of the house; I went out and got right under them, and had a good view of them.

“Yesterday, whilst pinning some beetles, I saw some birds in a tree, by the side of the creek; I took R. Foster’s telescope, and found them to be golden-winged woodpeckers, apparently two males and a female; the males were twisting their heads, erecting the feathers on their crowns, and spreading their tails in a most odd manner. I used to think our English green woodpecker put itself into the oddest attitudes at such times; but ’tis nothing to the golden-winged. At last, the two males had a furious battle; after which one flew away, followed by the female, and the other remained behind. Just after this, an Osprey passed like lightning along the creek, and perched on a large white oak, close by.

“This morning, 6th May, I heard a great screaming and scolding noise in the garden, and some of the oddest noises that bird ever made. I went to try to make it out, and found it was a *Pipra polyglotta* of Wilson, *Icteria viridis* of Bonaparte. But of all noises I ever heard made by birds I must confess that of the blue jays to be the worst; there are a good many round about here, but I have only seen one, which came into the garden to-day. The mewing of the cat-bird I also heard to-day, for the first time: a pair of them allowed me to get within ten yards: the birds here are all as tame as possible. The beautiful little summer yellow birds, *Sylvia citrinella*, are very numerous, and come so close that you can see the colour of every feather. There are also plenty of flycatchers, and several of the sparrow tribe, which I cannot yet make out: one has a note like a yellow-hammer; another, with a very pleasing note, I at first took to be a *Sylvia*, but have since made it out to be *Fringilla melodia*. There are also wrens and blackheaded tits in plenty, the note of the last is nearly like that of our blue-headed tit. The day before yesterday, walking from Hudson, I saw three meadow larks at play in the air; they alighted on a tree just by, and then crossed the road with their wings about two-thirds expanded, and scarcely moving: they passed so near that I could see every mark on their breasts. Of crows there are plenty, in flight and note as different as can be from ours; no one need mistake them. Not so the swallows, between which and our own in flight and note I cannot discover any difference. Besides plenty of swallows, there are to-day a great many swifts, here called chimney swallows, *Cypselus pelagica*; and one, if not two, species of *Hirundo*, which I cannot make out. The first woodpecker I have seen in the garden came to-day; he stayed so short a time that I could not make him out. A pair of *Turdus rufus* seem to have a nest somewhere near; they are as tame as the poultry. I have seen one or two grackles, and a bird which I take to be Wilson's *Alauda rufa*, Bonaparte's *Anthus spinoletta*; also a sandpiper, a partridge, *Tetrao umbellus*, some wild ducks, and one hawk I could not make out.

“I find that there are in this neighbourhood grey and red squirrels, ground squirrels, musk rats, &c.; but as yet I have only seen one ground squirrel. We walked yesterday to a hill covered with fir, arbor-vitæ, cedar, cypress, &c.; here we

found two box tortoises, those which close their shells; and saw the *Triton umbellus*. Among the clefts of the rocks, the little *Hepaticas* were flowering more beautifully than I have ever seen them in England; they are bright blue, pale blue and white; I have seen no pink ones. *Aquilegia Canadensis* was also in plenty, just coming into flower. The sides of the creek and the meadows are yellow for yards together, with the yellow dog's-tooth violet, and in other places white, with the beautiful *Sanguinaria Canadensis*.

"We had a deal of thunder yesterday, which continued most of the night: such thunder and lightning I never witnessed: the lightning was rose-coloured. The rain has caused the woods to put on rather a greener hue; but, save the willows, not a leaf of any deciduous tree is out: one or two cherry blossoms, and a peach blossom are nearly out, and the apple-trees are budding a little. Besides the plants I have mentioned, I have only seen a *Viola*, an *Anemone*, and a *Saxifraga*, which I do not know; also a *Gnaphalium* and a *Taraxacum*. The willows are in bloom partially, and yesterday I saw some *Vireo* (*V. olivaceus*, I think) catching flies off them. The wild vines in the woods have stems as large as my arm.

"Of insects few are out yet: of *Lepidoptera* none, save *Antiope*; another *Vanessa*, resembling *Urtica*, which I could not catch; we found also one crushed specimen of *Arctia fuliginosa*; one *Noctua*, and two or three *Tineæ*. Of *Coleoptera* we have taken many; *Cicindela*, two species; *Carabus*, 1; *Brachinus*, 1; *Lebia*, 1; *Cymindis*, 1; *Chlaenius*, several; *Pæcilus*, 1; *Harpalus*, several; *Anchomenus*, *Agonum*, and *Bembidium*, several; and one beautiful thing allied to *Carabus*. I have also a *Byrrhus*; one or two *Aphodii*; three or four *Melolonthæ*; several *Platæes*, one allied to *E. hæmorrhoidalis*, by dozens; *Nitidula*, one species; *Meligethes*, 1; *Altica*, several; and among these are several large and beautiful species, one the form of *A. Nemorum*, but much larger; it has a red thorax, and black elytra; each elytron having a white longitudinal line. The most extraordinary *Coleopterous* insect I have seen is a thing something like *Sepidium*, but shorter; it is heteromorous, covered with tubercles, and the male has two horns on the thorax; it is rather longer than our biggest *Trox*, which it a little resembles; I found one male and two females

of this insect on a fungus. I have also got a most beautiful *Chrysomela*, as large as *C. polita*, of a pale cream-colour with a green suture, and several green liture on the elytra; the thorax is also green. I have likewise taken a *Thanasimus*, an *Onthophagus*, a beautiful thing allied to *Ips*, and many others; but as they are still in their winter-quarters, it requires good hunting to find them. The old rotten stump swarms with ants, some species an inch long; also a small species of white ant, *Termes*; these are at present in the pupa state. The *Bombi*, *Andrenæ* and *Osmice* are just coming out. I have taken a very beautiful *Abia* or *Zarva*, with clouded wings; a species of *Dosytheus*, just like *D. Junci*, is abundant.

"Another bird this morning, a *Sylvia striata*; it has been running up and down the stem of a cherry-tree, about eight feet from the window, like a creeper; there are a great many robins about. Returning from Hudson to-day, I saw two large round winged hawks, as big as buzzards, and having the same cry: they were soaring very high, and in circles. I also saw another male Baltimore; these and the blue birds appear much brighter living than dead. I go on to Utica to-morrow, for a few days."

Death of Mr. Standish.

It is our duty to record the death of Mr. JOSEPH STANDISH, one of our oldest and most successful collectors of Lepidoptera. Mr. Standish was formerly in business as a stationer, and resided under the Royal Exchange, but has for many years been living independent of trade. He was not only a collector, but a close observer of the economy of Lepidoptera; he made an immense number of drawings of larvæ in all stages of their growth, and these, as well as others of the perfect insects, were executed with much fidelity and beauty. He died at Camberwell, in the eighty-fourth year of his age.

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PTEROMALUS *Steed.*

pulcherrimus *West.*

scenicus *Walk.*

invenustus *Walk.*

macromerus *Walk.*

stenogaster *Walk.*

prapileus *Walk.*

dimidiatus *Walk.*

fuscescens *Walk.*

CHEIROPACHUS *West.*

quadrum *Fabr.*

tutela *Walk.*

TRIGONODERUS *West.*

pulcher *Walk.*

filatus *Walk.*

tristis *Walk.*

ductilis *Walk.*

affinis *Walk.*

linearis *Walk.*

amabilis *Walk.*

figuratus *Walk.*

deductor *Walk.*

elegans *Walk.*

obscurus *Walk.*

contemptus *Walk.*

atrovirens *Walk.*

dolosus *Walk.*

hirticornis *Walk.*

ISOSOMA *Walk.*

vacillans *Walk.*

brevicollis *Hal.*

brevipennis *Walk.*

EURYTOMA *Hal.*

fumipennis *Walk.*

DECATOMA *Spin.*

mesomelas *Walk.*

flavicornis *Walk.*

aspilus *Walk.*

CALLIMOME *Spin.*

rudis *Walk.*

Angelicae *Walk.*

SPATHIUS *Ess.*

rubidus *Rossi.*

clavatus *Pav.*

DORYCTES *Hal.*

obliteratus *Ess.*

flaviceps *Hal.*

HETEROSPILUS *Hal.*

striatellus *Ess.*

Imperator *Hal.*

tabidus *Hal.*

Quaestor *Hal.*

HECABOLUS *Hal.*

sulcatus *Curt.*

PAMBOLUS *Hal.*

biglumis *Hal.*

CHIREMYLUS *Hal.*

rubiginosus *Ess.*

IIORMIUS *Ess.*

moniliatus *Ess.*

RIIYSSALUS *Hal.*

clavator *Hal.*

Indagator *Hal.*

COLASTES *Hal.*

Meditator *Hal.*

fragilis *Hal.*

braconius *Hal.*

Lustrator *Hal.*

lanceolator *Ess.*

ABDERA *Steph.*

picea *Walk.*

ORCHESIA *Latr.*

minor *Walk.*

COLASTES *Hal.*

decorator *Hal.*

hariolator *Hal.*

entenator *Hal.*

funestus *Hal.*

CLINOCENTRUS *Hal.*

excubitor *Hal.*

cunctator *Hal.*

umbratilis *Hal.*

vestigator *Hal.*

ROGAS *Ess.*

rugulosus *Ess.*

nobilis *Hal.*

tricolor *Hal.*

LIST OF THE GENERA AND SPECIES

gasterator *Spin.*
 geniculator *Ess.*
 alternator *Ess.*
 bicolor *Spin.*
 testaceus *Fabr.*
 dispar *Hal.*
 ADEMON *Hal.*
 decrescens *Ess.*

PLATYURA *Meig.*
 servula *Walk.*
 LEIA *Meig.*
 pubescens *Walk.*
 SEIOPHILA *Hoff.*
 rufilatera *Walk.*
 MYCETOPHILA *Meig.*
 flava *Walk.*
 ferruginea *Walk.*

PHLÆOTHRIPS *Hal.*
 Ulmi *Fabr.*
 Pini *Hal.*
 THRIPS *Linn.*
 cerealeum *Hal.*
 nitidula *Hal.*
 phalerata *Hal.*
 atrata *Hal.*
 Persicæ *Hal.*
 MELANTHRIPS *Hal.*
 obesa *Hal.*

MORELLIA *Desv.*
 hortorum *Fall.*
 importuna *Hal.*
 FANNIA *Desv.*
 aprica *Hal.*
 DELINA *Desv.*
 flava *Hal.*
 GEOMYZA *Fall.*
 sabulosa *Hal.*
 LEPTOMYZA *Macq.*
 cinerella *Hal.*
 DIASTATA
 fulvifrons *Hal.*

CLEPTES *Latr.*
 semiaurata *Linn.*
 nitidula *Rossi.*
 CHRYSIS *Linn.*
 ignita *Linn.*
 Var. 1. Alcione
 — 2. Asterope
 — 3. Celeno
 — 4. Electra
 — 5. Maia
 — 6. Taygeta
 Ruddii *Shuc.*
 fulgida *Linn.*
 stoudera *Spin.*
 analis *Spin.*
 bidentata *Linn.*
 succincta *Linn.*

cyanca *Linn.*
 cærulipes *Fabr.*
 Leachii *Shuc.*
 Austriaca *Fabr.*
 neglecta *Shuc.*
 EÜCHROEUS *Latr.*
 quadratus *Leach.*
 HEDYCHRUM *Latr.*
 regium *Fabr.*
 lucidulum *Fabr.*
 cærulescens *St. Farg.*
 ardens *Curt.*
 fervidum *Fabr.*
 roseum *Rossi.*
 auratum *Linn.*
 bidentulum *St. Farg.*
 Var. 1. imperiale *Leach.*
 — 2. bidentulum *St. Farg.*
 — 3. viride *Shuc.*
 — 4. æneum *Fabr.*
 ELAMPUS *Spin.*
 Panzeri *Fabr.*

OPIUS *Hal.*
 abnormis *Wesm.*
 Pygmeator *Ess.*
 pendulus *Hal.*
 lugens *Hal.*
 apiculator *Ess.*
 clarus *Hal.*
 spretus *Hal.*
 victus *Hal.*
 tacitus *Hal.*
 exilis *Hal.*
 pallipes *Wesm.*
 analis *Wesm.*
 instabilis *Wesm.*
 crassipes *Wesm.*
 sævus *Hal.*
 celsus *Hal.*
 vindex *Hal.*
 maculipes *Wesm.*
 cingulatus *Wesm.*
 irregularis *Wesm.*
 leptostigma *Wesm.*
 parvulus *Wesm.*
 docilis *Hal.*
 æthiops *Hal.*
 pactus *Hal.*
 æmulus *Hal.*
 polyzonius *Wesm.*
 nitidulator *Ess.*
 reconditor *Wesm.*
 truncatus *Wesm.*
 bajulus *Hal.*
 rudis *Wesm.*
 cæsus *Hal.*
 comatus *Wesm.*
 rufipes *Wesm.*
 cælatus *Hal.*
 caller *Wesm.*
 fulgidus *Hal.*

DESCRIBED IN THIS VOLUME.

placidus *Hal.*
carbonarius *Ess.*
impressus *Wesm.*
Rusticus *Hal.*
scabriculus *Wesm.*
Wesmaclii *Hal.*
sylvaticus *Hal.*
hæmorrhæus *Hal.*
blandus *Hal.*
bicolor *Wesm.*
GNAPTODON *Hal.*
pumilio *Ess.*

PLATYPALPUS *Macq.*
comptus *Walk.*
robustus *Walk.*
mundus *Walk.*
HEMERODROMIA *Hoff.*
Obscraatoria *Walk.*
RAGAS *Walk.*
unica *Walk.*
ATELESTUS *Walk.*
sylvicola *Walk.*

DIGLOSSA *Hal.*
mersa *Hal.*

PROPOMACRUS *Newm.*
Arbaces *Newm.*
SCARABÆUS *Linn.*
Cræsus *Newm.*

PRISTIPHORA *Steph.*
cineta *Newm.*
EUURA *Newm.*
galle *Newm.*
cynips *Newm.*
NEMATUS *Leach.*
tibialis *Newm.*
FENUSA *Leach.*
lanthe *Newm.*
parviceps *Newm.*
SELANDRIA *Leach.*
pallida *Newm.*
versicolor *Newm.*
chrysorrhæa *Klug.*
ALLANTUS *Leach.*
hæmatopus *Panz.*

CLEONYMUS *Latr.*
depressus *Fabr.*
laticornis *Hal.*
obscurus *Walk.*
NOTANISUS *Walk.*
versicolor *Walk.*
MACRONEURA *Walk.*
maculipes *Walk.*
MEROSTENUS *Walk.*
Phedyma *Walk.*
CEA *Hal.*
pulcaris *Hal.*
PROSOPON *Walk.*

montanum *Walk.*
STENOCERA *Walk.*
Walkeri *Curt.*
CALOSOTER *Walk.*
vernalis *Walk.*
æstivalis *Walk.*
EUELMUS *Dal.*
urozonus *Dal.*
Degeeri *Dal.*
excavatus *Dal.*
ERICYDNUS
paludatus *Hal.*
strigosus *Ess.*

DICONDYLLUS *Hal.*
pedestris *Hal.*
DRYINUS *Latr.*
collaris *Dal.*
ephippiger *Dal.*
fulviventris *Hal.*
lucidus *Hal.*
longicornis *Dal.*
flavicornis *Dal.*
ruficornis *Dal.*
frontalis *Dal.*
infectus *Hal.*
scapularis *Hal.*
brachycerus *Dal.*
cursor *Hal.*
inclutus *Hal.*
Jurineanus *Latr.*
Penidas *Walk.*
Lyde *Walk.*
Daos *Walk.*
Ilus *Walk.*
Misor *Walk.*
Otiartes *Walk.*
Alorus *Walk.*
Sisithrus *Walk.*
nanus *Hal.*
APHELOPUS *Dal.*
melaleucus *Dal.*
LABEO *Hal.*
excisus *West.*
EMBOLEMUS *West.*
Ruddii *West.*
EPYRIS *West.*
niger *West.*
BETHYLUS *Latr.*
fuscicornis *Latr.*

PLATYNOCHEILUS *West.*
Erichsonii *West.*
PLEUROPACHUS *West.*
costalis *Dal.*
ENCYRTUS *Dal.*
(CERCHYSIUS *West.*)
urocerus *Dal.*
cyaneus *Dal.*
Batillus *Walk.*
Gabinus *Walk.*
Marsus *Walk.*

LIST OF THE GENERA AND SPECIES.

argentifer *Hal.*
 Sipylus *Walk.*
 Comara *Walk.*
 Paralia *Walk.*
 barbarus *Dal.*
 Zarina *Walk.*
 æneiventris *Hal.*
 Jalysus *Walk.*
 Madyes *Walk.*
 Imandes *Walk.*
 Chærilus *Walk.*
 hemipterus *Dal.*
 Lindus *Walk.*
 Anceus *Walk.*
 Didius *Walk.*

melanopus *Hal.*
 subplumis *Dal.*
 Gellius *Walk.*
 Glaphyra *Walk.*
 Mattinus *Walk.*
 serricornis? *Dal.*
 Anebus *Walk.*
 Aralius *Walk.*
 Teuteus *Walk.*
 Aithya *Walk.*
 Sphærus *Walk.*
 Machæras *Walk.*
 subcupratus *Dal.*
 coniferæ *Hal.*

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